STIC
SCIENCE AND TECHNOLOGY INTERNATIONAL CONFERENCE

SCIENCE AND TECHNOLOGY INTERNATIONAL CONFERENCE (STIC) 2022

Udayana University, Bali - Indonesia
16 - 17 November 2022

ABSTRACT AND PROGRAM BOOK

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SCIENCE AND TECHNOLOGY INTERNATIONAL CONFERENCE (STIC) 2022

Welcome Speech from the Dean of Faculty of Mathematics and Natural Sciences, Udayana University

Praise our gratitude to the God and Almighty for all the blessings that have been bestowed on us all, so that the Science and Technology International Conference (STIC) 2022 in conjunction with Konsorsium Biologi Indonesia (KOBI) Congress can be held successfully.

The honourable of all Keynote Speaker, invited speakers, the Head of Konsorsium Biologi Indonesia (KOBI) and all team, the conference speakers and all conference attendants. I welcome all of you to this International Conference which being held in Udayana University and has received great attention and been attended by scientists from 6 different countries who are going to present, share and exchange the experience and research results in all aspects of science and technology. I believe that this conference will be the source of innovative ideas, concept and breakthroughs in the development of science and technology for the future, to support and fulfil the Sustainable Development Goals (SDGs) to change the world for the better. At the same time, the World's Leader from 20 Developed and Developing Countries gather in Bali to join the Presidential meeting of G20, with the theme "*Recover Together, Recover Stronger*", with three main topics are going to discussed, those are Strengthening global health architecture, Digital Transformation, and Energy Transition. The topics that are going to be discussed in the G20 meeting, I believe, all or part of it is related to the topic that will be discussed at this conference. It is a very memorable events that being held in Bali.

I express my highest gratitude and appreciation too, to the KOBI team, who entrusted us to organize the congress. My high appreciation also goes to the organizing committees for their hard work, perseverance, and patience in preparing and organizing this seminar so that it can go well, smoothly, and successfully. This conference happens also due to the support either financially or in other forms, from many parties, therefore I express my gratitude and appreciation. Finally, through this seminar, lets us extent our networks and collaborations in research, academics, and other area.

Denpasar, 16 November 2022
Sincerely,

Assoc.Prof. Ni Luh Watiniasih, M.Sc., Ph.D.
Dean of Faculty of Mathematics and Natural Sciences
Udayana University, Bali.

Chairperson Report

This book abstract compiles all works presented in the Science and Technology International Conference 2022. This conference is held at the Udayana University, Bali – Indonesia on 16 - 17 November 2022. The conference aims to bring together leading academic scientists, researchers, and research scholars to exchange and share their experiences and research results on all aspects of Science and Technology. It also provides a scientific interdisciplinary platform for researchers, practitioners, and educators to present and discuss recent innovations, current issues, trends, and challenges faced and solutions adopted in the field of Science and Technology.

Almost 250 persons from seven countries participated in this conference, which are from USA, Singapore, Spain, Australia, China, Taiwan, and Indonesia. There were four plenary presentations and one hundred fifty-five research abstracts were presented in this conference consisting of 61 biology, 25 chemistry, 16 computer sciences, 14 mathematics and statistics, 17 pharmacy, and 22 physics. The whole abstracts presented in this conference can be accessed in the abstract book that is circulated during the event. Some of those abstracts will be published as full papers in international proceedings, as well as in selected reputable scientific journals.

The efforts of the presenters to prepare their contribution papers for this symposium are highly appreciated. Special thanks should go to all those who have been involved in the committee of this international conference, for their tremendous supports and works to make the event was possible to be conducted. We do hope that all works presented in this conference will provide useful information for further studies in mathematics and natural sciences.

Thank you.

Chairperson of the Organizing Committee,
Dra. Luh Putu Eswaryanti Kusuma Yuni, M.Sc., Ph.D.

Rector's Remark

In this preface of abstract book, I would like to express my great appreciation to the organizing committee who has been working so hard to make the first International Conference on Science and Technology (STIC 2022) to happen smoothly. This conference is an upgrade of annual National Conference held by the Faculty of Mathematics and Natural Sciences, Udayana University. For this year, the conference held in conjunction with the 60th Anniversary of Udayana University. The main aim of this conference is to gather scientists of various disciplines within the Faculty of Mathematics and Natural Sciences from at least 5 different countries.

I am so happy to have you all in Bali which is well known in the world as a favorite tourist destination as well as recently a favorite site for holding International events, such as International Conferences. As this conference is designed to gather scientists, engineers, practitioners, and industries in the field of Mathematics and Natural Sciences, I expect that an intense discussion will happen among them so that some brilliant ideas to be used to improve the quality of human life can be formulated and later published in proceedings or reputable journals.

Here, I would also like to acknowledge the National and International keynote/invited speakers for their willingness to come miles away to Bali and present their high quality or outstanding papers. I understand that you all have spent much time to prepare slides or manuscript for this conference, and therefore I must give high appreciation on all of those effort and dedication.

I hope this International Conference is an ideal forum for communication and sharing ideas as well as experience in the disciplines of Mathematics and Natural Science in the future. I also hope that this forum served as a forum for promoting advanced Mathematics and Natural Sciences with regard to economic growth and social welfare.

Finally, I wish you all have successful and fruitful conference and hope that it provides new ideas and strategies for the application of Mathematics and Natural Sciences in all aspects of our life.

See you again next year (2023).

Prof. Dr. Ir. I Nyoman Gde Antara, M.Eng.
Rector of Udayana University, Bali.

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Science and Technology International Conference (STIC) 2022

THEME

"Bridging Mathematics and Physical Science Through Multidisciplinary Research"

SCOPES

1. **Biology**, includes Botany, Zoology, Microbiology, Genetics and Biology Molecular, Ecology and Conservation, etc.
2. **Chemistry**, includes Environmental Chemistry, Material Chemistry, Food Chemistry, Natural Product Chemistry, etc.
3. **Computer Science**, includes Artificial Intelligent, Big Data and Data Science, Network Computing, Information System, etc.
4. **Mathematics and Statistics**, includes Mathematics Education, Algebra, Number Theory, Geometry, Dynamical Systems, Ordinary Differential Equations, Partial Differential Equations, Probability and Statistics, Combinatorics and Graph Theory, Mathematical Aspects of computer Science, Numerical Analysis and Scientific Computing, Control Theory and Optimization, etc.
5. **Pharmacy**, includes Analytical Pharmacy, Bio-pharmacy, Technology Pharmacy, Clinical Pharmacy, etc.
6. **Physics**, includes Quantum Physics, Optics, Magnetism, Biophysics, Photonics, Instrumentation Physics, Sensors and Actuator, Biosensor, Electronics, Computational Physics, Geophysics, Medical Physics, Nuclear Physics, Materials Physics, Nanoscience and Nanotechnology, Imaging Physics, etc.

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Made Anita Kusuma Wardhani

KEYNOTE AND INVITED SPEAKERS

Prof. Kalidas Shetty
North Dakota State University
– USA –

Prof. Stephane Bressan
National University of Singapore
– Singapore –

Prof. Wei-Song Hung
National Taiwan University of Science and Technology
– Taiwan –

Prof. Nancy Cromar
Flinders University
– Australia –

Dr. Emery T. Goossens
Foresite Labs
– USA –

Dr. Hao Wang
Institute of Tropical Bioscience and Biotechnology, Chinese Academy of Tropical Agricultural Sciences
– China –

Paulus Swasono Satyo N.
Sinar Mas Mining Indonesia
– Indonesia –

Dr. Maria Ikonomopoulou
IMDEA Spain
– Spain –

Prof. Tjitjik Srie Tjahjandarie
Universitas Airlangga
– Indonesia –

Prof. Komang Dharmawan
Universitas Udayana
– Indonesia –

SCHEDULE

SCIENCE AND TECHNOLOGY INTERNATIONAL CONFERENCE (STIC)
UDAYANA UNIVERSITY, BALI – INDONESIA
16TH – 17TH NOVEMBER 2022

DAY 1: Wednesday, 16th November 2022

Link: http://s.id/stic-2022

Time (ICT)	Activities	Venue
08.30 – 09.05	Opening Ceremony • Welcome Dance • Indonesia National Anthem • Chanting Prayers • Chairperson Report • Welcome Speech by Dean FMIPA Unud • Speech and Official Opening by Rector Unud	Hybrid: Zoom & Nusantara Hall, 4th Floor Agrocomplex Building
09.05 – 09.10	Photo Sessions	
09.10 – 09.30	Morning Refreshment	
09.30 – 10.40	**Plenary 1: Keynote Speakers** *Moderator: Dr. Yan Ramona* *Keynote 1: Prof. Kalidas Shetty* *Keynote 2: Prof. Nancy Cromar* Panel Discussion Closing Plenary 1	
10.40 – 11.50	**Plenary 2: Keynote Speakers** *Moderator: Dr. Ngurah Agus Sanjaya ER* *Keynote 1: Prof. Stephane Bressan* *Keynote 2: Prof. Wei-Song Hung* Panel Discussion Closing Plenary 2	
11.50 – 12.00	Announcements	
12.00 – 13.00	Lunch Break	
13.00 – 14.40	**Plenary 3: Keynote Speakers** *Moderator: Prof. Komang Dharmawan* *Keynote 1: Dr. Emery T. Goossens* *Keynote 2: Dr. Hao Wang*	

	Keynote 3: Paulus Swasono Satyo N. Panel Discussion Closing Plenary 3
14.40 – 15.00	Afternoon Break
15.00 – 16.40	**Plenary 4: Keynote Speakers** *Moderator: Fainmarinat S. Inabuy, Ph.D.* *Invited 1: Dr. Maria Ikonomopoulou* *Invited 2: Prof. Tjitjik Srie Tjahjandarie* *Invited 3: Prof. Komang Dharmawan* Panel Discussion Closing Plenary 4

Note: ICT Indonesia Central Time or Waktu Indonesia Bagian Tengah (WITA) is 13 hours ahead of Eastern Standard Time.

Link: https://www.worldtimeserver.com/time-zones/wita-to-est/ or https://www.freeconvert.com/time/wita-to-gmt

DAY 2: Thursday, 17th November 2022

Link: http://s.id/stic-2022

Time (ICT)	Activities	Venue
08.00 – 08.45	Registration	Hybrid: Zoom & FMIPA Post Graduate Building
08.45 – 09.00	Opening by MC	
09.00 – 12.00	Parallel Session	
12.00 – 13.00	Lunch Break	
13.00 – 15.00	Parallel Session	
15.00 – 15.15	Closing Ceremony *Chairperson Report* *Concluding Remark* *Closing by MC*	

Note: ICT Indonesia Central Time or Waktu Indonesia Bagian Tengah (WITA) is 13 hours ahead of Eastern Standard Time.

Link: https://www.worldtimeserver.com/time-zones/wita-to-est/ or https://www.freeconvert.com/time/wita-to-gmt

Oral Presentation Schedule

DAY 2: Thursday, 17th November 2022

GUIDANCE FOR PRESENTER

1. Please submit your slides (.ppt or .pdf) to your time-keeper, **15 minutes before the session starts**, at the latest (See the list below for Room coordinators).

2. Each presenter has 7 minutes (maximum) to give presentation.

3. It is mandatory to deliver your talk in English, as well as your presentation materials.

4. There will be a Question & Answer (Q&A) session **after three presentations**, so please stay in the room to answer questions for you. Each presenter will be given maximum 3 minutes to address all questions.

5. For documentation purpose, our room time-keeper will take your picture at the end of your presentation, so please turn the camera on.

6. Should you have any question or queries, please contact your room time-keeper (See the list below for time-keeper list).

   Time-keeper list:
   - Breakout Room 1: Julia (081353781216)
   - Breakout Room 2: Widia (087861406126)
   - Breakout Room 3: Ananda (085156818469)
   - Breakout Room 4: Rahman (0881037810318)
   - Breakout Room 5: Hammam (0895350630610)
   - Breakout Room 6: Gus Angga (089664211603)
   - Breakout Room 7: Anggun (081353879852)

The Breakout Room for the parallel session can be accessed through link: http://s.id/stic-2022

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	13.00 – 14.00
BREAKOUT ROOM 1	BI – 01	BI – 53	BI – 50	BI – 12
	BI – 02	BI – 08	BI – 52	BI – 19
	BI – 03	BI – 61	BI – 14	BI – 20
	BI – 04	BI – 09	BI – 15	BI – 21
	BI – 05	BI – 10	BI – 16	BI – 22
	BI – 06	BI – 11	BI – 17	

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	13.00 – 14.00
BREAKOUT ROOM 2	BI – 29	BI – 28	BI – 35	BI – 39
	BI – 23	BI – 58	BI – 36	BI – 40
	BI – 24	BI – 30	BI – 37	BI – 41
	BI – 25	BI – 31	BI – 38	BI – 42
	BI – 26	BI – 32	BI – 44	BI – 43
	BI – 27	BI – 33	BI – 56	

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	13.00 – 14.00
BREAKOUT ROOM 3	CHEM – 01	CHEM – 07	CHEM – 13	CHEM – 19
	CHEM – 02	CHEM – 08	CHEM – 14	CHEM – 20
	CHEM – 03	CHEM – 09	CHEM – 15	CHEM – 21
	CHEM – 04	CHEM – 10	CHEM – 16	CHEM – 22
	CHEM – 05	CHEM – 11	CHEM – 17	CHEM – 23
	CHEM – 06	CHEM – 12	CHEM – 18	

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	**10.00 – 11.00**	**11.00 – 12.00**	**13.00 – 14.00**
BREAKOUT ROOM 4	IF – 01	IF – 06	IF – 12	BI – 48
	IF – 02	IF – 07	IF – 13	BI – 49
	IF – 03	IF – 08	IF – 14	BI – 34
	IF – 04	IF – 09	IF – 15	BI – 51
	IF – 05	IF – 11	IF – 16	BI – 18
	IF – 10			

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	**10.00 – 11.00**	**11.00 – 12.00**	**13.00 – 14.00**
BREAKOUT ROOM 5	MATH – 01	MATH – 07	MATH – 12	BI – 07
	MATH – 02	MATH – 08	MATH – 13	BI – 13
	MATH – 03	MATH – 09	MATH – 14	BI – 54
	MATH – 04	MATH – 10	CHEM – 24	BI – 55
	MATH – 05	MATH – 11	CHEM – 25	BI – 59
	MATH – 06			

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	**10.00 – 11.00**	**11.00 – 12.00**	**13.00 – 14.00**
BREAKOUT ROOM 6	PHARM - 01	PHARM - 07	PHARM - 13	BI – 45
	PHARM - 02	PHARM - 08	PHARM - 14	BI – 46
	PHARM - 03	PHARM - 09	PHARM - 15	BI – 47
	PHARM - 04	PHARM - 10	PHARM - 16	BI – 57
	PHARM - 05	PHARM - 11	PHARM - 17	BI – 60
	PHARM - 06	PHARM - 12		

	Session 1	Session 2	Session 3	Session 4
	09.00 – 10.00	**10.00 – 11.00**	**11.00 – 12.00**	**13.00 – 14.00**
BREAKOUT ROOM 7	PHY - 01	PHY - 07	PHY - 12	PHY - 18
	PHY - 02	PHY - 08	PHY - 13	PHY - 19
	PHY - 03	PHY - 09	PHY - 14	PHY - 20
	PHY - 04	PHY - 10	PHY - 16	PHY - 21
	PHY - 05	PHY - 11	PHY - 17	PHY - 22
	PHY - 06	PHY - 15		

Abstract ID and Title

No	Abstract ID	Title and Author/s
1	**BI - 01**	**Is colony of *Porphyromonas gingivalis* injected in sulci gingival detected in peripheral blood of periodontitis animal model?** Agustin Wulan Suci Dharmayanti, Fadhlan Rifqi, Zahara Meilawaty, Suhartini, Hendy Hendarto
2	**BI - 02**	**Combination of *Hibiscus rosa-sinensis* L. flower and *Annona muricata* L. leaf infusion in reducing uric acid blood levels in Hyperuricemic mice** Dian Fita Lestari, Fatimatuzzahra
3	**BI - 03**	**Strawberry extract, orange extract, and ascorbic acid (SOA) formulation ameliorates the inflammatory effect in Lipopolysaccharide-induced rat lung cells** Diah Kusumawaty, Wahyu Widowati, Hanna Sari Widya Kusuma, Agung Novianto, Afif Yati, Trina Ekawati Tallei, Rizal Rizal
4	**BI - 04**	**Activity of moringa leaf tea infusion against SGPT levels in male white rats after toxic dose formalin induction** Ida Bagus Made Suaskara, Ni Gusti Ayu Manik Ermayanti
5	**BI - 05**	**Maggot Meal *Hermetia illucens* as a Substitute for Fish Meal in Laying Duck Diet on Eggs Production and Cholesterol Levels** Kustiati Kustiati, FX Widadi Padmarsari Soetignya, Tri Rima Setyawati, Retno Budi Lestari, Muhammad Khaerul Rizqi
6	**BI - 06**	**Conditioned medium of Wharton's Jelly mesenchymal stem cells for anti-inflammation and regenerative therapy** Wahyu Widowati, Teresa Liliana Wargasetia, Fanny Rahardja, Rimonta F Gunanegara, Didik Priyandoko, Marisca Evalina Gondokesumo, Hanna Sari Widya Kusuma, Rizal Rizal

7	**BI - 07**	**Pancreatic Histology of Rats PCOS Model that Supplemented by Ethanol Extract of Ketip Banana Stems** Ni Wayan Sudatri, Ni Made Suartini
8	**BI - 08**	**Response of human umbilical cord mesenchymal stem proliferation during exposure to curcumin extract variations in dose and time** Titta Novianti, Mochamad Ichsan, Etik Madliyati, Ita Margaretha
9	**BI - 09**	**Elucidation and antibacterial of kayu manis (*Cinnamomum burmanni* Blume) as a biopreservative in processed sate lilit of food, specifically Bali** I.B.G. Darmayasa, Yan Ramona, A.A. Ketut Darmadi
10	**BI - 10**	**Promising phytase activity of Indonesian Lactic Acid Bacteria isolated from meat of Peranakan Ongole** Glusi Ladyani Meristica Lukman, Irma Isnafia Arief, Komang Gede Wiryawan, Cahyo Budiman, Zaenal Abidin
11	**BI - 11**	**Screening and production of bacterial phosphatase enzyme isolated from Tuban mangrove soil, East Java Indonesia** Dela Dwi Alawiyah, Fatimah, Salamun, Almando Geraldi, Ni'Matuzzahroh
12	**BI - 12**	**Potential of lactic acid bacteria (vaginal secrete isolates) to inhibit *Candida albicans* ATCC10231** Yan Ramona, Ida Bagus Gede Darmayasa, Komang Dharmawan, Ni Made Teriyani, Fainmarinat Selviani Inabuy
13	**BI - 13**	**In Vitro Inhibition of Lactic Acid Bacteria Isolated from Vaginal Secrete of Healty Women Against *Candida albicans* ATCC 10231** Ni Made Teriyani, Yan Ramona, Fainmarinat Selviani Inabuy

14	**BI - 14**	***In vitro* test of the role of dark septate endophytic fungi (*Leptodontidium orchidicola, Podospora glutinans*, and *Zopfiella latipes*) to promote tomato and rice plant growth in different nitrogen sources** Surono, Kazuhiko Narisawa
15	**BI - 15**	**Optimization of cultural condition and downstream process for microbial surfactant produced by *Achromobacter xylosoxidans* BP(1)5** Sari Silvia Kurnia, Ni'matuzahroh, Fatimah, Khiftiyah Ana Mariatul, Nastiti Trikurniadewi, Achmad Zainal Abidin
16	**BI - 16**	**The Ability of *Enterobacter aerogenes*, *Pseudomonas maculicola*, and *Pseudomonas putida* to Remediate Heavy Metal Pollution** Rohani Cinta Badia Ginting, Jati Purwani
17	**BI - 17**	**Optimization of *Saccharomyces cerevisiae* starter and Fermentation Time in Green Bean Robusta Coffee to Produce Antioxidant Activities** Putu Sanna Yustiantara
18	**BI - 18**	**Fungal propagation of *Glomus* spp. indigenous Bali on different soil types** Meitini Wahyuni Proborini, Deny Suhernawan Yusup, Anak Agung Devina Asana Putri, Kadek Dian Lila Sawitri Kumala
19	**BI - 19**	**Bio efficacy of frog skin microbiota as biological control agents against chili anthracnose disease** Lela Susilawati, P. Afrizka Sari, Maulana Septiani
20	**BI - 20**	**Screening of endophytic bacteria that produce antimicrobial compounds in *Rhizophora stylosa* mangroves from Enggano Island** Fatimatuzzahra, Risky Hadi Wibowo, Yar Johan, Thoriqul Hidayah, Putri Hezekiel C. Simanjutak, Livia R. Sinaga, Annisa Amelia Putri

21	**BI - 21**	**Evaluation of antimicrobial activity and probiotic abilities of *Rhodotorula mucilaginosa* RG-PK20 strain** Seprianto, Febriana Dwi Wahyuni, Titta Novianti, Oktaviani Naulita Turnip, Yusma Yennie, Indra Kurniawan Saputra
22	**BI - 22**	**Optimization and identification of BL-20 and PT-20 yeast isolates as protease producing candidates** Bella Octavia, Seprianto, Febriana Dwi Wahyuni, Henny Saraswati
23	**BI - 23**	**Potential of Bacterial Volatile Compounds (BVCs) of *Enterobacter asburiae* as an induction of rice plants resistence (*Oryza sativa* L) against *Curvularia* Leaf Spot Disease** I Putu Sudiarta, Nadya Dewi Kirana, Khamdan Khalimi
24	**BI - 24**	**Effect of lead (Pb) concentration on stomatal density of *Bougainvillea spectabilis* cultivar in Bojonegoro Regency** Hamidah, Moch. Affandi, Ulfa Khoirun Nisak
25	**BI - 25**	**Eco-enzyme as liquid organic fertilizer for plants growth** Made Ria Defiani, Ida Ayu Astarini
26	**BI - 26**	**Responses of soil respiration and organic carbon to organic soil amendments in upland paddy** Nurhidayati, Abdul Basit, Sama' Iradat Tito, Masyhuri
27	**BI - 27**	**Morphometric characteristics of *Enhalus acoroides* at Sanur Beach, Semawang Beach and Samuh Beach, Bali** Made Pharmawati, Ni Putu Adriani Astiti, Ni Nyoman Wirasiti
28	**BI - 28**	**Stomatal density and morphological analyses of several orchid at Bali Botanic Garden** Putu Apriliani, Made Pharmawati

29	**BI - 29**	**Formulation and evaluation of red dragon fruit skin gel** Novi Febrianti, Lina Widyastuti, Septiana Saputri
30	**BI - 30**	**Diversity of mollusks for ecotourism attractions in the mangrove ecosystem of Nusa Lembongan, Bali-Indonesia** I Ketut Ginantra, I Ketut Muksin, Martin Joni
31	**BI - 31**	**Species of birds in Sidey, Warmare and Maruni at the Regency Manokwari** Agustinus Kilmaskossu, Maria J. Sadsoeitoeboen, Fajar R.N.Sianipar, Johanis P. Kilmaskossu, Paskalina Th. Lefaan, Agatha C. Maturbongs
32	**BI - 32**	**Vegetation management in the Perancak Mangrove Ecotourism Area, Jembrana** I Ketut Sundra, Martin Joni
33	**BI - 33**	**Ecological quality index of seagrass at Mertasegara (Sanur) and Terora (Nusa Dua) Beaches** Deny Suhernawan Yusup, Job Nico Subagio, I Nyoman Giri Putra, Made Ayu Pratiwi
34	**BI - 34**	**Potential of butterflies as ecotourist attractions in Taro Village, Tegallalang District, Gianyar Regency** Anak Agung Gde Raka Dalem, Job Nico Subagyo
35	**BI - 35**	**The diversity of cinnamon plants (*Cinnamomum burmanni* Blume) that live in two different habitats, ie Belok Village, Pengang District, Badung and Bedugul Village, Baturuti District Badung, Bali** AA. Ketut Darmadi, Fainmarinat S. Inabuy, Sang Ketut Sudirga
36	**BI - 36**	**Preliminary study of spring quality in Science Techno Park Unwira Bone Village, Nekamese District, Kupang Regency**

		Yulita Iryani Mamulak, Chatarina Gradict Semiun, Emilianus Pani, Stefanus Stanis, Tesalonika Manansang, Christin Mesakh
37	**BI - 37**	**The local wisdom of Jernang Rattan by the tribe of Batin Sembilan in the Indonesia's Ecosystem Restoration Area in Jambi Sumatera** Revis Asra
38	**BI - 38**	**Age structure of Sasau Fish (*Hampala macrolepidota* Kuhl van Hasselt, 1823) in Singkarak Lake** Renny Risdawati
39	**BI - 39**	**Distribution and mineral analysis of *Pila scutata* snails at rice fields in the District of Gianyar** Ni Made Suartini, Ni Wayan Sudatri, Dewi Sabrina Amalia, Wafiatul Fitriyah
40	**BI - 40**	**Feed preference of fruit bats (*Cynopterus brachyotis*)** Isdi Catra Dewi Supardan, Swastiko Priyambodo
41	**BI - 41**	**Inventory of *Pholidota carnea* (Blume) Lindl. and it's host trees at Pengelengan Hills, Pegayaman, Buleleng, Bali** Ni Made Gari, Junita Hardini
42	**BI - 42**	**Inventory of dragonfly types in Juwet Rice Field, in Abiansemal, Badung, Bali, after concrete irrigation channels** Martin Joni, Ida Bagus Made Suaskara
43	**BI - 43**	**Morphological characterization of water mold causing Saprolegniasis in fish from Mina Kepis Sleman Yogyakarta** S.M Setyawati, R.S Kasiamdari, B. Retnoaji, Kurniasih
44	**BI - 44**	**Detecting forest bird sound in Mt. Merapi National Park, Java, Indonesia using passive bioacoustic recording unit**

		Ign. Pramana Yuda, Raden Nicosius Liontino Alieser, Maria Yuventia Widiatresna, Gregorius Valens Eryen, Desmond Cato Krisyudho, L. Indah Murwani Yulianti, C. Kuntoro Adi
45	**BI - 45**	**Diagnosis of virus causes diseases in ornamental shrimp at FQIA Denpasar with Multiplex PCR method** Ida Ayu Mirah Meliana Dewi, Putu Eka Sudaryatma, Inna Narayani
46	**BI - 46**	**Antioxidant and anti-inflammatory effects of Salak fruit peel extract on an aging cells model** Ermi Girsang, Chrismis N. Ginting, I Nyoman Ehrich Lister, Wahyu Widowati, Afif Yati, Hanna Sari Widya Kusuma, Rizal Rizal
47	**BI - 47**	**Green tea extract effect on ASC and CCL-2 gene expressions as the potential against ARDS** Didik Priyandoko, Wahyu Widowati, Afif Yati, Hanna Sari Widya Kusuma, Rizal Rizal
48	**BI - 48**	**Amplification of gene encoding antifungal compounds from *Bacillus subtilis* subsp. *subtilis* STTG 14 and analysis of its antifungal properties** Sri Martina Wiraswati, Abdjad Asih Nawangsih, Iman Rusmana, Aris Tri Wahyudi
49	**BI - 49**	**First report of *Colletotrichum magnum* causing anthracnose in *Carica papaya* fruits in Bali, Indonesia** Sang Ketut Sudirga, I Made Saka Wijaya, Anak Agung Ketut Darmadi
50	**BI - 50**	**Expression of the *Roc5* gene in drought-stressed rice** Miftahudin, Muhammad Alfaridhzi M. Mangka, Aris Tjahjoleksono
51	**BI - 51**	**School Surveillance - a multi- disciplinary scheme for safe school conduct during pandemic Covid-19**

		Fainmarinat S. Inabuy, Anrian Pah, Dominggus Elcid Li, Alfredo Kono
52	**BI - 52**	**Genetic variation of Enggano Hill Myna (*Gracula religiosa enganensis* Salvadori 1982) based on *Cytochrome* B gene mitochondrial DNA** Jarulis, Amanda Yulila Reza, Choirul Muslim
53	**BI - 53**	**Bee pollen and rosella flower extract as drug-candidate for fertility** Ni Luh Watiniasih, Dewa Ayu Swastini, Luh Putu Ida Harini
54	**BI - 54**	**Developments of several specific SARS-CoV-2 primer sets to distinguish Delta and Omicron variants using S-Gene Target Failure (SGTF) approaches** Regi Melati Fauziah, Feren Stevany Wiranata, Tatu Sabrina, Seprianto, Titta Novianti
55	**BI - 55**	**Optimizing the plasmid injection of *rpob* and *Katg* genes for diagnostic testing of Multidrug Resistance Tuberculosis (MDR-TB)** Titta Novianti, Intan Febdiana, Feby, Henny Saraswati, Febriana Dwi Wahyuni, Seprianto, Adri Nora, Alfero Putra Iryanto, Putri Roslaein, Nie Nie, Sabar Pambudi
56	**BI - 56**	**Revealing the diversity of the Cyprinidae family in the area of Merangin Geopark, Jambi, based on the DNA barcodes** T. Sukmono, T.Kaswari, P. Eko, T. Wulandari
57	**BI - 57**	**Bird diversity at Udayana University Jimbaran Campus, Badung - Bali** Ni Made Ayu Rita Sari, Ratu Ayu Ningrat, Stephanie Regina, Anak Agung Ngurah Bagus Abimanyu, I Made Saka Wijaya, Luh Putu Eswaryanti Kusuma Yuni
58	**BI - 58**	**Rhizobacteria combined *Piper caninum* extract to increase the production of Bali red rice** Ni Luh Suriani, Dewa Ngurah Suprapta, I Nyoman Suarsana, M.S. Reddy, Yulmira Yanti

59	**BI - 59**	**Nutrition and determination of bioactive compounds of *Talinum paniculatum* (Jacq) Gaertn (Som Java)** Agus Muji Santoso, Poppy Rahmatika Primandiri, Tutut Indah Sulistiyowati, Ida Rahmawati, Yoshepine Sri Wulan Manuhara, Eko Setiyono, Sulistiono
60	**BI - 60**	**The use of mangrove forest by the Bali myna *Leucopsar rothschildi* at Bali Barat National Park** Luh Putu Eswaryanti Kusuma Yuni, I Made Saka Wijaya, I Ketut Ginantra
61	**BI - 61**	**Morphological studies of tadpoles in Jeruk Manis Protected Forest, Gunung Rinjani National Park** Yuliadi Zamroni, Imran Sadewo, Galuh Tresnani, Bambang Fajar Suryadi, Islamul Hadi
62	**CHEM - 01**	**The determination of total free amino acids and soluble protein contents in red bean sprout (*Phaseolus vulgaris* L.) extract in various germination times** A. A. I. A. Mayun Laksmiwati, Emmy Sahara, Ketut Ratnayani
63	**CHEM - 02**	**Active compounds and antifungal activity of the bark extract of *Michelia champaca* to *Curvularia verruculosa* fungal the causes of leaf spot desease in rice plants** I Gusti Agung Gede Bawa, Sri Rahayu Santi, Wiwik Susanah Rita
64	**CHEM - 03**	**Synergism of total flavonoid levels in increasing antioxidant activity herbal formulation of *Gyrinops versteegii* leaves with *Cinnamon* and *Caesalpinia*** Adi Parwata, Alit W., Mega, Angga Kusuma, Putu Gede Adi Purwa Hita

65	**CHEM - 04**	**Antioxidant and antibacterial activities of *Trigona* sp. nanopropolis** Ida Ayu Gede Widihati, Ni Gusti Ayu Made Dwi Adhi Suastuti
66	**CHEM - 05**	**Formulation of solid herbal soap extract of girang leaf (*Leea angulata* Korth. Ex Miq) with antioxidant and antibacterial potential** Ni Luh Rustini, Ni Komang Ariati
67	**CHEM - 06**	**Administration effect of methanol extract from *Protium javanicum* Burm.f (tenggulun) leaf on lipid peroxidation in rats exposed to cigarette smoke** Ni Made Puspawati, Ni Luh Rustini, I Dewa Gede Yoga Paramartha
68	**CHEM - 07**	***Staphyloccocus aureus* antibacterial compounds in the stem bark of *Inocarpus fagiferus* Fosb.** Sri Rahayu Santi, I Made Sukadana, I Gusti Agung Gede Bawa
69	**CHEM - 08**	**Flavonoid from chloroform extract of *Samanea saman* Jacq. leaves as an inhibitor of the growth of *Fusarium solani*, the cause of dragon fruit stem rot disease** Wiwik Susanah Rita, Dewa Ngurah Suprapta, I Made Dira Swantara, I Made Sudana
70	**CHEM - 09**	**Two derivatives of 7-Aminocephalosporanic Acid (7-ACA) compounds and their antibacterial activities** Dewi Meliati Agustini, Ernawati Arifin Giri-Rachman, Yana Maolana Syah
71	**CHEM - 10**	**Transformation of purines and resveratrol** Dyah Ayu Rachmadhaningtiyas, Elvira Hermawati, Deana Wahyuningrum, Yana Maolana Syah
72	**CHEM - 11**	**Xanthorrhizol and its derivatives as the inhibitors of Caspase-7** Yunita Purnamasari, Nizar Happyana, Yana Maolana Syah

73	**CHEM - 12**	**Esterification reaction and antioxidant activity test of xantone derivatived compounds isolated from the mangosteen peel (*Garcinia mangostana* L.)** I Wayan Suirta, Ida Ayu Raka Astitiash
74	**CHEM - 13**	**Absorption of lead (Pb) levels of polluted soils and their accumulation in gumitir plants (*Tagetes erecta* L.)** I G. A. K. S. P. Dewi, N. L. G. A. Sunariani, I. E. Suprihatin
75	**CHEM - 14**	**Prototype on anaerobic deposition reactor based on sulphate reducing bacteria for laboratory wastewater treatment** Wayan Budiarsa Suyasa, Gede Adi Wiguna Sudiartha, Ni Wayan Bogoriani
76	**CHEM - 15**	**Silver nano particles biosynthesis using soursop leaves water extract and its application as a photocatalyst in the photodegradation of congo red** I.E. Suprihatin, A.A.S.D. Saraswati, IG.A.G. Bawa, G.A.D. Lestari, N.K.P. Antariksa
77	**CHEM - 16**	**Preparation and characterization of bamboo charcoal activated $ZnCl_2$ as an adsorbene *Remazol Brilliant Blue*** Manuntun Manurung, Ni Made Suaniti, Salsabila B.H, I Gede Yuda Putra
78	**CHEM - 17**	**Validation of phosphate analysis method with spectrophotometer** Ni G. A. M. Dwi Adhi Suastuti, I G. A. Kunti Sri Panca Dewi
79	**CHEM - 18**	**Loaded silver from photographic waste on ZnO/active carbon for visible photodegradation of methylene blue** N.P. Diantariani, D.A. Krisna Dewi, P. Suarya, I.A. Widihati

80	**CHEM - 19**	**Regeneration of CaO/K_2O-TiO_2/H composite catalyst after used for biodiesel synthesis: the effect of desorption solvents and calcination temperatures** I Nengah Simpen, I Made Sutha Negara
81	**CHEM - 20**	**The Effectivity of methanol extract of jackfruit leaves (*Artocarpus heterophyllus* Lam.) as natural inhibitor of ST37 steel placed on corrosive solution of NaCl** Putu Suarya, Anak Agung Bawa Putra
82	**CHEM - 21**	**Study of X-Ray diffraction characterization of nanoparticles core-shell $CoFe_2O_4$/ZnO** Putu Udiyani Prayika Putri, I Putu Tedy Indrayana
83	**CHEM - 22**	**Fabrication of Metakaolin-Based Lightweight Geopolymer Membrane with Cotton Fiber Reinforcement for Methylene Blue Separation** Safira Habiba Nuhaa, Hamzah Fansuri
84	**CHEM - 23**	**Variation of enzyme-substrate ratio in the hydrolysis of germinated red beans (*Phaseolus vulgaris* L.) protein by papain enzyme** Oka Ratnayani, Made Ririn Dwi Rahayu, Ketut Ratnayani
85	**CHEM - 24**	**Scanning electron microscope analysis of interaction zinc oxide with lactic acid bacteria corporated in yogurt** Zaenal Abidin, Elfa Aida Kamila, Irma Isnafia Arief, Zakiah Wulandari, Muhammad Arifin
86	**CHEM - 25**	**The role of cem-cem leaf extract (*Spondias pinnata* L.f Kurz) as hypolipidemia in obese wistar rats** Ni Komang Ariati, Ni Wayan Bogoriani
87	**IF - 01**	**Application of IoT (internet of things) for management and digitalization of performing**

		arts towards bali rise from the Covid-19 pandemic: downstreaming of cppu research and udayana university innovation I Gusti Agung Gede Arya Kadyanan, I Gede Anom Sastrawan, Dwi Putra Githa, Ida Bagus Made Mahendra
88	**IF - 02**	**QR-code based participant search information system** I Gusti Ngurah Anom Cahyadi Putra, Anak Agung Made Krisna Artawan, Ida Bagus Ari Widhiana, Anak Agung Ngurah Mahadana Apta Gotra
89	**IF - 03**	**Natural language analysis of WHO ICD-10 data to reduce diagnosis errors** I G N L Wijayakusuma, I Putu Winada Gautama
90	**IF - 04**	**Mobile-based redesign of Bali learning for children increasing training outcomes** IKG Suhartana, IGA Wibawa
91	**IF - 05**	**Handwritten Balinese character recognition using backpropagation** I Made Widiartha, Luh Gede Astuti, Duman Care Khrisne
92	**IF - 06**	**Redesign of smoothdraw application into modrescript based on total ergonomic approach increasing health quality and productivity of modre learning writing in information engineering students of Udayana University** I Wayan Santiyasa
93	**IF - 07**	**Artificial neural network modelling on estimating family hope program assistance** I Wayan Supriana, Made Agung Raharja
94	**IF - 08**	**Development of dam monitoring and early warning applications based on temporal imagery and ultrasonic sensors** Ida Bagus Made Mahendra, I Gusti Agung Gede Arya Kadyanan
95	**IF - 09**	**UI/UX design prototype patanjali yoga asana expert system application for beginners based on android**

		L.G. Astuti, Luh Arida Ayu Rahning Putri
96	**IF - 10**	**A digital portal for Balinese folklore with natural language processing framework** Ngurah Agus Sanjaya ER, Ni Luh Nyoman Seri Malini, Pijar Candra Mahatagandha
97	**IF - 11**	**Design and development of air quality prediction system suspended particulate matter with backpropagation algorithm** Made Agung Raharja, Gede Alanda Indra Kusuma, Cokorda Pramartha, I Wayan Supriana
98	**IF - 12**	**Face recognition-based automated attendance recording system** I Dewa Made Bayu Atmaja Darmawan
99	**IF - 13**	**Deep learning for chatbot technology** AAIN Eka Karyawati, LAAR Putri
100	**IF - 14**	**Emotion classification based on Convolutional Neural Network (CNN) in Electro Encephalogram (EEG) data** Agus Muliantara, Kartika Sari, Lalu Muhamad Waisul Kuroni, I Putu Ryan Paamaditya
101	**IF - 15**	**Development of integrated location identification guideline system with total ergonomic approach for people with neural disabilities** I Made Widhi Wirawan, Cokorda Rai Adi Pramartha
102	**IF - 16**	**Information retrieval system for its usage services using Tf-Idf and cosine similarity** I Putu Gede Hendra Suputra, I Made Widhi Wirawan
103	**MATH - 01**	**Occupational mobility model of tourism sector workers during the COVID-19 pandemic** Desak Putu Eka Nilakusmawati, I Gusti Ayu Made Srinadi, Desak Ketut Tri Martini
104	**MATH - 02**	**AISAS model in destination rebranding: a case study of Bali tourism after covid-19** Eka N. Kencana, Ketut Jayanegara

105	**MATH - 03**	**Application of control theory for stability analysis of the dynamic model of B*ali starling* (*Leucopsar rothschildi)* breeding in West Bali National Park** G K Gandhiadi, Ketut Jayanegara
106	**MATH - 04**	**The impact of collaborative and participatory classes on course learning outcomes** I Gusti Ayu Made Srinadi, DPE Nilakusmawati
107	**MATH - 05**	**Analysis of Community Compliance with The Covid-19 Health Protocols: A Quantitative Analytical Approach** I Komang Gede Sukarsa, GK. Gandhiadi
108	**MATH - 06**	**Chaos: predict the unpredictable** I Made Eka Dwipayana
109	**MATH - 07**	**Forecasting Indonesia's inflation rate using deep autoregressive networks** I Wayan Sumarjaya, Made Susilawati, Made Angga Permana Wibisana Putra, Ni Kadek Lani Pitrayani
110	**MATH - 08**	**Selection of rotation type in factor analysis** IA Komang Meriani, I Komang Gede Sukarsa, Ketut Jayanegara, Eka N Kencana
111	**MATH - 09**	**Do consumers' preferences differ between traditional vs modern market? A quantitative study using factor analysis** Ketut Jayanegara, Eka N Kencana
112	**MATH - 10**	**Development of game-based interactive learning media for basic numeracy skills** Luh Putu Ida Harini, I Gede Santi Astawa
113	**MATH - 11**	**The effect of layoffs as the impact of covid-19 on livelihoods in Ubud village** Ida Ayu Putu Ari Utari, Ratna Sari Widiastuti
114	**MATH - 12**	**The effect of social media on the development of tourism destinations affected by Covid-19** Ratna Sari Widiastuti, Ida Ayu Putu Ari Utari

115	**MATH - 13**	**Balinese Public Perception Post Vaccination in Preventing the Covid-19 Pandemic** M. Susilawati, I Wayan Sumarjaya
116	**MATH - 14**	**Sensitivity analysis of COVID-19 spreading models with asymptomatic and symptomatic classes** Winada Gautama, Tari Tastrawati
117	**PHARM - 01**	**Determination of standard parameters of Galing-Galing (*Cayratia trifolia* (L.) Domin) leaf extract as a candidate for sunscreen raw materials** Anak Agung Gede Rai Yadnya Putra, Luh Putu Febryana Larasanty, Ayu Atika Aziz, Ibagus Duta Anandika
118	**PHARM - 02**	**Antioxidant activity test on ethanol extract of soursop leaves (*Annona muricata* L.) using DPPH method (*1,1-diphenyl-2-picrylhidrazyl*) and edible film formulation** Eka Yulli Kartika, Ghina Siti Nurhayati
119	**PHARM - 03**	**Efficacy of bajakah tampala (*Spatholobus littoralis* Hassk.) ethanol extract, a typical plant of Kalimantan Island (Borneo), against *Streptococcus pyogenes* biofilm** Hasyrul Hamzah, Sylvia Utami Tunjung Pratiwi, Asriullah Jabbar, Chaerul Fadly M. Luthfi
120	**PHARM - 04**	**Mangrove-Derived fungi as a reservoir of promising secondary metabolites for anticancer agents** Ni Kadek Ari Kristiani, Ni Putu Indah Suryani, I Putu Yogi Astara Putra, Caresya Insani Bangga Nabila, Ni Putu Eka Leliqia, Ni Putu Ariantari
121	**PHARM - 05**	**Endophytic fungi and their secondary metabolites with acetylcholinesterase inhibitory activity**

		Ni Wayan Prasanthi Swarna Putri, Sang Ayu Made Dwi Ariesta Putri, Ni Luh Putu Vidya Paramita, Ni Putu Ariantari
122	**PHARM - 06**	**Combination effect of *Centella asiatica* L. leaf and clove oil as antibacterial** Ni Luh Putu Vidya Paramita, Ida Ayu Putu Sintya Dewi, Ni Putu Manik Sri Arum, Anak Agung Gede Rai Yadnya Putra, Ni Putu Linda Laksmiani, Ni Putu Eka Leliqia
123	**PHARM - 07**	**Antibacterial activity of Bali kele honey extract from *Trigona laeviceps* against *Escherichia coli* and *Pseudomonas aeruginosa*** Ni Putu Eka Leliqia, Ni Luh Putu Vidya Paramita, Cokorda Istri Diah Ari Saci Prabandari Susila, Dina Mawaddah
124	**PHARM - 08**	**Optimization of $MgCl_2$ concentration on amplification of *ori* and *bla* fragments for recombinant vaccine expression vector construction using PCR method** I Wayan Martadi Santika, Putu Sanna Yustiantara
125	**PHARM - 09**	**Application of quality by design approach to the development and evaluation ethanolic extract of noni fruit seeds (*Morinda citrifolia* L.) hydrogel** Cokorda Istri Sri Arisanti, I Made Agus Gelgel Wirasuta
126	**PHARM - 10**	**Preparation and characterization of daluga starch *(Cyrtosperma merkusii*) fully gelatinized as pharmaceutical excipient** I Gusti Ngurah Agung Dewantara Putra, Krisna Adi Jaya
127	**PHARM - 11**	**Biosynthesis, characterization of gold nanoparticles using ascorbic acid and their biological activities** Ratih Dyah Pertiwi, Hermanus Ehe Hurit, Aprilia Nur Widiastuti
128	**PHARM - 12**	**Determination of Calcium Oxalate in porang flour** Ni Made Widi Astuti, Ni Kadek Warditiani

129	**PHARM - 13**	**Effective fractionation method of betacyanin from red dragon fruit using macroporous AB-8 resin for pharmaceutical purposes** Pande Made Nova Armita Sari
130	**PHARM - 14**	**Phytochemical fingerprint of fermented *Cascara* tea for product quality assurance purpose** I Made Agus Gelgel Wirasuta
131	**PHARM - 15**	**Developing an instrument for assessing the safety level of antiplatelet usage in outpatients with coronary heart disease** Made Krisna Adi Jaya, Luh Putu Febryana Larasanti
132	**PHARM - 16**	**Correlation between community demographics to the use of health information and communication technology (e-health)** Luh Putu Febryana Larasanty, Made Krisna Adi Jaya, Agus Adi Purnama Putra, Rai Patricia Kusuma Dewi, Luh Gd. Karisma Widiantari, Ni Putu Indah Apriliani
133	**PHARM - 17**	**Hedonic test of secang wood facemist products as face fresheners** Ni Putu Linda Laksmiani, Rindang Dwiyani, Ni Putu Eka Leliqia, Ni Luh Putu Vidya Paramita, I Wayan Sukadana, Luh Putu Febryana Larasanty
134	**PHY - 01**	**Investigation on the dielectric and microstructural properties of Geopolymer-Graphene Oxide (GO) Composites subjected to poling treatment** Agus Susanto, Abdul Haris, Muhammad Saleh
135	**PHY - 02**	**The Effect of TiO_2 Film Immersion Duration In N719 Dye On Microstructure, Optical Properties and Photoanode Performance of Photosupercapacitors Based FTO/TiO_2/N719/Activated Carbon/Carbon Black** Markus Diantoro, Ida Vaeruza Albadi'ah, Nasikhudin

136	**PHY - 03**	**Silver Nanowires (AgNWs) Post-Treatment Effect in Application of Transparent and Conductive Electrodes: A Mini Review** Nasikhudin, Yusril Al Fath, Hari Rahmadani, Markus Diantoro, Herlin Pujiarti, Muhammad Safwan Abd Aziz
137	**PHY - 04**	**Design of Air Pressure and Height Measuring Equipment based on Arduino Nano Using BME280 Sensor** I Made Satriya Wibawa, I Ketut Putra
138	**PHY - 05**	**Core-shell Fe_3O_4/Ag Nanoparticles: Synthesis and Characterization of Their Structural, Optical, and Magnetic Properties** I Putu Tedy Indrayana, Putu Udiyani Prayika Putri, Nadiya Miftachul Chusna, Nurul Imani Istiqomah, Mayumi Cahyandari
139	**PHY - 06**	**Study of the effect of Lanthanum and Cerium Doping combination onmagnetic properties of M-Type Hexaferrite Oxide Permanent Magnets** I Gusti Agung Putra Adnyana, Komang Ngurah Suarbawa
140	**PHY - 07**	**Mapping of earthquake proposed areas based on the parameter b-value and *Peak Ground Acceleration* (PGA) in the Bali region** KN Suarbawa, I GA Putra Adnyana
141	**PHY - 08**	**Application of hydroponic plants watering automations based on ATMEGA328 microcontroller on water water spinach (*Ipomea aquatic*a Forsk)** I Wayan Supardi, Ni Nyoman Rupiasih, I Ketut Putra
142	**PHY - 09**	**Analysis of slice thickness variation on contrast resolution of CT scan device imagery at Bali Mandara Hospital** Ni Kadek Nova Anggarani, Ida Bagus Made Suryatika
143	**PHY - 10**	**Anode heel effect application with stepwedge and variation of X- Ray tube voltage to contrast to noise ratio in computed radiography** Ni Nyoman Ratini, I Made Yuliara, Winardi Tjahyo Baskoro

144	**PHY - 11**	**Performance test of single heating dryer for chilli commodity processing** I Gde Antha Kasmawan, Winardi Tjahjo Baskoro, I Made Satriya Wibawa
145	**PHY - 12**	**Quantum teleportation of entangled four-qubit via GHZ-like states** I Nengah Artawan, Ni Luh Putu Trisnawati
146	**PHY - 13**	**Analysis of the effectiveness of the diagnostic laboratory wall on exposure rate of X-ray radiantion** Ni Luh Putu Trisnawati, I Nengah Sandi
147	**PHY - 14**	**Relocation of the Seririt earthquake 14 November 2019 using double difference method** Winardi Tjahyo Baskoro, I Made Yuliara, Ni Nyoman Ratini, Tolhas Tomu Tumeang
148	**PHY - 15**	**A critical review on the characteristics of leachate and their effect on ground water quality in Antang, Makassar, Indonesia** Agus Susanto, Muhammad Arsyad, Sulistiawaty
149	**PHY - 16**	**The Natural Iron Sand Magnetite Crystal From Lokapaksa Beach** Putu Suardana, Made Sumadiyasa, Ni Wayan Sudatri
150	**PHY - 17**	**Investigation on Ground Water Potential and Lithology Aquiver properties of Karst Maros-Pangkep, South Sulawesi, Indonesia** Agus Susanto, Muhammad Arsyad, Pariabti Palloan
151	**PHY - 18**	**The Effectiveness of Chitosan Concentration from Windu Shrimp Skin (*Penaeus monodon*) as a Natural Preservative in Kenyar Fish (*Sarda orientalis*)** Ni Nyoman Rupiasih, Yosefa Yakunda Tandu, Nyoman Wendri
152	**PHY - 19**	**Total suspended solid (TSS) modeling of the suwung river estuary using Sentinel-2A** I Made Yuliara, Ni Nyoman Ratini, Gde Antha Kasmawan

153	**PHY - 20**	**Identification of geothermal rocks in Angseri Village and surroundings with gravity method** I Ketut Sukarasa, Ida Bagus Paramarta
154	**PHY - 21**	**Estimated effective dose of head organs from computed tomography scanner (C.T. Scan.)** I B. M. Suryatika, I K. Putra, I. B. Surya Wibawa, I M. Aditya Jaya
155	**PHY - 22**	**Application of automatic yarn winder to increase productivity in traditional Cagcag weaving business** Ni Putu Amanda Saraswati, I Wayan Guna Permana, Ni Putu Cahya Saptarisa, Ni Made Mita Puspa Sar, I Made Sukadana, I Gusti Ngurah Janardana

Plenary Abstracts

PLENARY 1

Metabolic innovations for climate resilient and health-targeted food systems

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Abstract

Food systems must be reliant on food diversity and ecological diversity as critical and essential foundations of global food security. This is needed in a post-pandemic world where climate change-linked ecological adaptations must be resilient to address public health challenges impacting co-morbidities and emerging infections from breakdown in ecology. This is the foundation to addressing global food security challenges and associated public health burdens which can be aligned to value-added rural development strategies. Current resilience of global food security is burdened with on-going challenges from inadequate macro and micronutrients leading to hunger in communities with extreme poverty. At the same time current health challenges are even more seriously impacted with larger burden from growing excess calories burden from hyper processed and low micronutrient-dense diets Impacting global food security with serious public health consequences with non-communicable chronic diseases (NCD) such as type 2 diabetes and its complications. This has increased co-morbidities from obesity burden and reduced immunity making the world more susceptible to sudden infectious pandemics. Improving food diversity with higher intake of whole grains, legumes, fruits, and vegetables with high fiber to support beneficial microbiome and high redox protective phytochemicals that supports digestive and vascular pathways away from breakdown towards NCD is critical and essential. Therefore integrating "food for health" and "food systems for climate resilience" paradigm while advancing local food diversity with ecological and cultural foundations in indigenous and rural knowledge is essential for resilience to climate change.

PLENARY 1

We are on a highway to climate hell with our foot on the accelerator

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Abstract

In this presentation, Prof. Cromar will highlight the challenges of delivering the Sustainable Development Goals (SDGs) in the Asia Pacific region in response to the recent comments of the UN Secretary General at COP27 in Egypt. Initially considering the context by looking at population growth, increasing urbanisation and anthropogenic-induced climate change in the region; the presentation will outline the scope of the SDGs; their derivation and the links between them, focussing on the need for their successful integration. Using examples of sustainable energy and water resources, the presentation will also explore the notion of 'localising' the SDGs and will emphasise the need for reporting mechanisms especially focussed on voluntary reporting for all countries in the region, using relevant examples from Indonesia and Australia. The context for the presentation is work done with UN-ESCAP and UCLG (Asia Pacific) and SACOSS (South Australia) in consultation with the author. Professor Cromar would like to acknowledge the support of these entities in the content of this presentation.

PLENARY 2

From symbolic artificial intelligence to statistical machine learning in 42 years

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Abstract

This keynote presentation recounts a personal research journey from symbolic artificial intelligence to statistical machine learning, with detours to data management and integration, information retrieval, and natural language processing. The presentation is illustrated by applications to domains ranging from medicine to quantum physics via Web and social media and environmental engineering. The discussion shall attempt to shed light on the importance of mathematics in computer science research. The audience will learn how to program in Prolog, query in SQL, and chalk like an Egyptian.

PLENARY 2

Tuneable interlayer spacing of composite graphene oxide-framework membrane for organic solvents dehydration

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Abstract

Introduced in the present work are techniques we developed for deposition of highly ordered laminates of graphene oxide (GO) on polyacrylonitile ultrafiltration membranes. Also, results of application of the prepared composite membranes for dehydration pervaporation of alcohols will be discussed. By introducing ethylenediamine with various chain lengths as crosslinkers, we were able to tune the spacing between GO laminates, to prepare cross-linked GO membranes with high separation performance for dehydration of ethanol, isopropanol and butanol. The permeation fluxes and permselectivities of the prepared membranes are both higher than those of commercial pervaporation membranes. We also successfully prepared GO-chitosan polyelectrolyte membranes that can be used for methanol dehydration, which cannot be achieved by the currently available commercial membranes because of their low membrane stability. With the covalent and ionic bonds between GO and chitosan, the stability of the GO-chitosan membranes was good enough for methanol dehydration. Such membranes could have great potential for commercial applications. In addition to the membrane preparation techniques and separation performances, transport mechanism of water and alcohols through the prepared membranes will be discussed as well to reason the high separation performance of the membranes with structure of highly ordered laminates.

PLENARY 3

Featurization of complex biological data using deep learning

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Abstract

The first wave of biological measurement technologies gave rise to data that is relatively straightforward to analyze with classical statistical methods. These data, which include individual genomic variants and gene expression alongside clinical outcomes or experimental labels, have successfully led to new insights about human biology and pointed to new directions for treating disease. Yet there are many other types of biological data that do not easily fit into hypothesis testing frameworks or linear regression models in their raw form. These complex data take the form of sequences (e.g. large regions of DNA), graphs (e.g. chemical compounds), and images (e.g. radiological images of human tissue, microscopic images of cells). Prior to the development of modern machine learning approaches, these complex data were first transformed into single or low-dimensional formats guided by specific scientific knowledge prior to modeling. These "hand-crafted" featurizations only extract part of the information contained within these data, effectively simplifying the otherwise rich information provided therein. Deep learning has been successful in prediction using images and text when large, labeled datasets are available. This talk explores the use of deep learning models trained on large datasets to featurize various types of biological data into high-dimensional and usable data formats ready for downstream statistical analysis or prediction models where fewer samples are available.

PLENARY 3

Chemical component characteristics of agarwood from three *Aquilaria* plants

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Abstract

Agarwood is the fragrant resinous heartwood harvested from the *Aquilaria* or *Gyrinops* species of the family Thymelaeaceae, which forms as a response to the tree wounding or injury (e.g., lighting striking, burning, axe chopping, nailing, holing, fungus inoculation). As a natural incense and valuable traditional therapy, agarwood is used for various purposes such as medical, daily cosmetic, religious ceremonies, and so on. However, the quality and price of agarwood in the market vary widely, and agarwood and its products lack standards of identification and grade classification. Our group isolated and identified the chemical component characteristics of agarwood from three *Aquilaria* plants, i.e. *Aquilaria sinensis*, an *Aquilaria* plant, and *Aquilaria filaria*, and revealed that sesquiterpenes and 2-(2-phenethyl)chromones are the two main types of components. Moreover, the sesquiterpenes from agarwood exhibit various types, including eudesmanes, eremophilanes, guaianes, prezizaanes, zizaanes and so on, and their content in three agarwood samples were different. 2-(2-phenethyl)chromones and their derivatives are the most characteristic components of agarwood, and can be used as a marker for authentication. The substitution and substituents attached at the 2-(2-phenethyl)chromones core structure and their dimers' linkages are different among different agarwood samples. On top of that, the authentication method was established, which set the stage for the evaluation and utilization of agarwood resources.

***Keywords**: Agarwood, Aquilaria, authentication method, chemical component, sesquiterpenes*.

PLENARY 3

Implementing HR digital and sustainable business transformation in the STEM talent industry

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Abstract

We are progressing into the Industry 4.0, where rapid change is affecting the workforce as a result of increasing connectivity and transformation. Not only do STEM industries require new talents that can unite to make a capable workforce, STEM is also needed to nurture the system and business platforms. We believe, future leaders and workers have the ability to understand and solve complex challenges of today and tomorrow. To meet the demands of the dynamic and evolving workforce, building employees' skills that integrated with the STEM field is essential. TechConnect has launched a Business and Digital Transformation plan, and adopted the foundation philosophy of the "Redwood Project". This philosophy seeks to apply a holacracy-metaverse business model in the workplace, encouraging the employees agility to adapt with changing business conditions and integrate STEM competencies to each development program. It places responsibility for HR teams to act as a control tower, dispatching employees to certain roles with specific considerations and creating an agile round robin system. To empower our internal talents to cope with these changes while impacting productivity and business growth, we provide them with development programs such as the Inclusive Development Program and Exclusive Leadership Development Program. These are carried out through learning tools and platforms, which are also managed by way of technology and AI. Therefore, creating an interconnected business ecosystem of tech-based workforce through rotation, promotion, global vendor, squad team optimization is necessary. With around 18% increase of new leaders from our multiple development program, we are optimistic that our tools will continue to aid us in finding and developing more leaders.

Keywords: *Technology, STEM, Talent, Human Resource, Development, Industry 4.0*

PLENARY 4

The anti-tumoral properties of animal venoms

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Abstract

Venomous animals display extremely diverse pharmacological activities ranging from anaesthetic, analgesic, immunomodulatory and anti-tumoral. The venom is a rich arsenal of small molecules, enzymes, salts, peptides and proteins. One venom may comprise over 1000 unique compounds. Many of these compounds are defined by their extreme potency, resistance to proteolytic degradation, specificity, and stability. Altogether, underscore the potential of venom-compounds as drug-candidates and/or scaffolds for therapies. Indeed, there are 11 drugs derived from animal toxins (peptides or proteins) approved by US or European drug authorities. These toxin-derived drugs are used for hypertension, acute coronary syndromes, coagulation during surgery, chronic pain, type 2 diabetes and perioperative bleeding. In addition, many other toxins are currently in clinical trials or in preclinical development. Of importance is Chlorotoxin, a 36 residues long scorpion-derived peptide, which crosses the blood brain barrier and showcases remarkable specificity towards gliomas. Clinical trials have emphasised on its potential applications either as a treatment or as an imaging (tissue staining) tool in brain cancer. However, there are no approved anti-cancer drugs derived from animal venoms. This is the gap our group aims to cover. This talk will highlight some of our recent studies on the potential of animal venom-compounds as anti-cancer drug candidates or scaffolds.

PLENARY 4

Diversity of Bioactive Compounds from *Flemingia* Indonesia

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Abstract

Indonesia is one of the countries with the largest biodiversity in the world, one of which is plants. Indonesia is overgrown with about 37,000 species of high-level plants with 20,000 plants that are endemic to Indonesia. The richness of Indonesian plants is closely related to the endemism of plant species and the content of secondary metabolites, so Eastern Indonesian plants have the potential to be developed for drug exploration, one of which is *Flemingia*. *Flemingia* is one of the genera of flowering plants belonging to the Fabaceae family, it has been reported that the content of active compounds is anticancer has been reported. Research on two types of *Flemingia* species, namely, *F. macrophylla* and *F. lineata*, produced flavonoid-derived compounds, namely geranylated chalcone and prenylated flavanones, which were determined by a combination of spectroscopic methods which have activity in inhibiting the growth of 4T1, T47D, WiDr, and HeLa cells. The results of the study on *F. macrophylla* found a new active compound Flemingin P-Q (1-2) as well as two compounds that have been identified, 3-Hydroxyflemingin A (3) and Deoxyhomoflemingin (4). Flemingin Q (2) has strong activity against 4T1, T47D, and HeLa cells, while 3-Hydroxyflemingin A (3) is active against cancer cells. *F lineata* produces two new flavanone compounds flemilineatins A and B (5-6) and 6-isoprenyl eridioctyol (7) which are analogs. The three types of flavanones were very active against HeLa cells

Keywords: Flemingia macrophylla, Flemingia lineata, *Flemingins P–Q, flemilineatins A-B, Cytotoxicity*

PLENARY 4

Predicting Bali Cattle Body Weight Based on Body Dimensions Using Machine Learning Regression Analysis

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Abstract

Various machine learning algorithms have been used to model and predict the body weight of cattle. However, there is no machine algorithms has been applied to predict Bali cattle weight. This paper discussed the application of regression of machine learning algorithms to develop models for the prediction of the body weight of Bali Cattle. The dependent variables include body weight and independent variables include body length, chest circumference, rump width, chest width, rump Height, wither height of 500 Bali Cattle of similar ages. Regression analysis using machine learning algorithms was carried out by splitting the data into training data (80%) and test data (20%) for the learning process. The first learning shows the heigh wither does not significant ($p > 0.05$), does not significantly contributed to the body weight, so this variable was removed from the model. Next, in the second learning process, the rump width does not significantly affect the cattle weight, so this variable is removed from the model. In the third learning process, we found that the best fit model is BodyWeight =1 + ChestCircum + BodyLength × ChestWidth. The performance of the models is assessed based on evaluation criteria of the coefficient of determination, the root mean squared error. It was concluded that machine learning algorithms may provide better results than the traditional models and may help researchers choose the best predictors for body weight of Bali Cattle.

Keywords: *Linear Regression, Machine Learning Algorithm, Cattle Body Weight prediction*

Oral Presentation Abstracts
BIOLOGY

Botany, Zoology, Microbiology, Genetics and Biology Molecular, Ecology and Conservation, etc.

ABSTRACT ID: BI-01

Is colony of *Porphyromonas gingivalis* injected in sulci gingival detected in peripheral blood of periodontitis animal model?

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Abstract

Periodontitis is a chronic inflammatory disease of the periodontal tissues characterized by gingival inflammation and alveolar bone destruction. An increase in the colony and virulence of periodontal pathogenic bacteria, including Porphyromonas gingivalis (*P. gingivalis*), is associated with the prevalence of periodontitis. The enhancement of bacterial colonies and virulence induces local and systemic inflammation in the periodontal tissue. Numerous researchers have examined the connection between systemic disorders and infection with *P. gingivalis* or other bacteria. However, the systemic disorder that is the intra-gingival induction of *P. gingivalis* commences with the colonization of *P. gingivalis* in the peripheral blood. This investigation sought to identify *P. gingivalis* in the peripheral blood of periodontitis model animals. This study was a laboratory experiment with a pre- and post-test group design, using male rats as a model for periodontitis. Every three days, the animal models were injected with 0.05 ml of *P. gingivalis* induction. Before blood sampling, the periodontitis status of the animal models must be confirmed by radiographic examination for alveolar bone reduction and clinical examination for chronic inflammation. *P. gingivalis* was identified based on the colony's characteristics and morphology in BHI-A culture and Gram stain. The results of the seventh day of post-induction rat blood culture revealed colonies ranging in size from

0.75 to 3 mm that were glossy black and dome-shaped. Therefore, the gram stain revealed that the bacteria were coccobacillus. This study concludes that there are bacteria similar to *P. gingivalis* in the blood of a rat model of periodontitis.

Keywords: *black pigmented colony,* P. gingivalis *colony, peripheral blood, periodontitis*

ABSTRACT ID: BI-02

Combination of *Hibiscus rosa-sinensis* L. flower and *Annona muricata* L. leaf infusion in reducing uric acid blood levels in hyperuricemic mice

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Abstract

Hyperuricemia is a high serum uric acid level in the blood which can be caused by high purine in the body. Uric acid in the blood can be lowered with drugs, one of the drugs is allopurinol, but long-term use can cause health effects on the body's organs. The aim of this research was to determine the effect of the combination of infusion of hibiscus flower (*Hibiscus rosa-sinensis*) and soursop leaf (*Annona muricata*) on uric acid levels of mice induced by hyperuricemia. Mice were divided into 6 treatment groups (n=4/each group), negative control without treatment, hyperuricemia induced using potassium oxonate intraperitoneally and chicken liver juice orally administrated for 7 days. The positive control used allopurinol, and the treatment was given infusion orally administrated for 7 days. The results of the research showed that the phytochemical test results of the combination of *H.rosa-sinensis* flower and *A. muricata* leaf infusion contained flavonoid and phenolic compounds. Treatment group using infusion with a concentration 25% showed the most reduction on blood uric acid levels from the other treatment groups up to 44% compared to the positive control group. This shows that the combination of hibiscus flower and soursop leaf infusion has the potential to reduce blood uric acid levels in mice or as a natural compound of anti-hyperuricemic.

Keywords: *flavonoid, infusion, hyperuricemia*

ABSTRACT ID: BI-03

Strawberry extract, orange extract, and ascorbic acid (SOA) formulation ameliorates the inflammatory effect in Lipopolysaccharide-induced rat lung cells

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Abstract

Inflammation is a necessary immune system response to eliminate harmful stimuli. Lipopolysaccharide (LPS) is an outer membrane component of gram-negative bacteria. It is one of the harmful stimuli that induce inflammation in lung. Strawberry, orange, and ascorbic acid have been known as strong antioxidants. In addition to antioxidant, they possess an anti-inflammatory activity. The strawberry extract, orange extract, and ascorbic acid (SOA) were formulated to generate a better anti-inflammatory agent. This study was aimed at assessing the anti-inflammatory activity of SOA by measuring the levels of gene expression of TLR4, NFκB, IL-1β, and TNF-α. One μg/mL of LPS was used to induce inflammation in L2 cells. The viability of the cells was determined using the 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium (MTS) assay on SOA concentration of 200, 100, 50, 25, 12.5, 6.25, and 3.13 μg/ml. The SOA concentrations of 100 μg/ml and 25 μg/ml were used for anti-inflammation therapy. The expression of TLR4, NFκB, IL-1β, and TNF-α genes on the cell was measured using qRT-PCR. Results indicated that SOA concentrations of 100, 50, 25, 12.5, 6.25, and 3.13 μg/ml were safe for L2 cells with cells viability up to 90%. The expression of TLR4, NFκB, IL-1β, and TNF-α genes was significantly reduced by SOA treatment compared to the positive control. The SOA concentration of 100 μg/ml was more effective than SOA concentration of 25 μg/m in decreasing inflammation genes. The

findings indicated that SOA has the potential to act as an anti-inflammatory in inflamed lung cells.

Keywords: *anti-inflammatory, ascorbic acid, lung cells, orange extract, RTPCR, strawberry extract*

ABSTRACT ID: BI-04

Activity of moringa leaf tea infusion against SGPT levels in male white rats after toxic dose formalin induction

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Abstract

Formalin which is used as a food preservative when it enters the body will be metabolized and detoxified by the liver, and cause the production of toxic metabolites that could damage hepatocytes. Moringa leaf tea is one of the sources of food that functions as a hepatoprotector. The purpose of this study was to determine the activity of infusion of Moringa leaf tea as an antioxidant and hepatoprotector on albino male rats induced by toxic dose of formalin. The method used in this study was a Randomized Block Design (RAK). Liver damage of albino male rats model was carried out by induction of formalin (dose of 0.100 ml/BW) as a negative control, infusion of Moringa leaf tea was given at a dose of 50, 75, 100 mg/BW once a day and aquades as a positive control for 7 days. The formalin-induced group of mice showed a significant increase on SGPT level (101.60) compared to the positive control (55.60). Oral supplementation of Moringa leaf tea infusion on albino male rats induced by formalin reduced the SGPT value (98.60 for the 50mg/BW treatment; 92.40 for the 75mg/BW treatment and 80.70 for the 100mg/BW treatment) compared to the negative control (without the treatment of infusion of Moringa leaf tea).

Keywords: *moringa leaf tea, toxic dose, SGPT, formalin*

ABSTRACT ID: BI-05

Maggot meal *Hermetia illucens* as a substitute for fish meal in laying duck diet on eggs production and cholesterol levels

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Abstract

Maggot *Hermetia illucens* is an alternative protein source for animal feed. This study aimed to determine the production, weight, and cholesterol levels of alabio laying duck. Five combination of feed with the substitution for fish meal i.e 0%, 3%, 6%, 9%, and 12% maggot meal were given to 20 head alabio laying duck. The cholesterol levels were determined by the indirect method. The results showed that the eggs production were 36.15±8.15, 33.1±9.16, 33.05±6.87, 30.2±4.09, and 27.6±2.95 egg/head; the egg weight 61.69±4.2, 64.52±4.32, 63.97±4.33, 64.35±4.51, and 63.86±6.53 g/egg; the cholesterol levels 469±4.57, 564±3.81, 188±3.14, 177±1.65, and 205±3.11 mg/100g respectively. The feed without maggot substitution produced the highest number of eggs but with the lowest weight and high cholesterol levels, while the substitute of 9% maggot meal gave the most optimal results with the number of eggs 30.2±4.09 egg/head, weight 64.35±4.51 g/egg, and the lowest cholesterol levels 177±1.65 mg/100g. This indicated that substitution of maggot to certain extent produce the best amount and weight as well as cholesterol levels.

Keywords: *maggot meal, laying duck, eggs production, cholesterol levels*

ABSTRACT ID: BI-06

Conditioned medium of Wharton's Jelly mesenchymal stem cells for anti-inflammation and regenerative therapy

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Abstract

Acute Respiratory Distress Syndrome (ARDS) is an acute respiratory failure disease caused by acute inflammation, microvascular damage, increased pulmonary vascular permeability, and epithelium. COVID-19 infection can cause cytokine hyperproduction, resulting in various immunological reactions such as ARDS to death. The Conditioned Medium of human Wharton's Jelly Mesenchymal Stem Cells (hWJMSCs-CM) anti-inflammatory and regenerative properties due to their secretion such as growth factor cytokine, chemokine. This research was performed to measure the level of Interleukin-10 (IL-10), Epidermal Growth Factor (EGF), Hepatocyte Growth Factor (HGF), Vascular Endothelial Cell Growth Factor A (VEGF-A) in hWJMSCs-CM both non-starvation and starvation. The levels of IL-10, EGF, HGF, VEGF-A in hWJMSCs-CM non-starvation, 24-, 48, 72-starvation periods were measured using ELISA method. The hWJMSCs secreted IL-10 level was 45.06-116.66 pg/ml, EGF level was 51.67-80.69 pg/ml, HGF level was 260.17-454.83 pg/ml and VEGF-A level was 385.72-576.95 pg/ml. The longer starvation incubation period of hWJMSCs increased protein level secretion. The hWJMSCs-CM secreted anti-inflammatory and regenerative factor as potential candidate for ARDS therapy

Keywords: *acute respiratory distress syndrome*, *conditioned medium*, *growth factor*, *human Wharton's jelly, mesenchymal stem cell.*

ABSTRACT ID: BI-07

Pancreatic histology of rats PCOS model that supplemented by ethanol extract of ketip banana stems

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Abstract

Polycystic ovary syndrome (PCOS) causes infertility in women. PCOS was also associated with hyperglycemic and obesity. Ketip banana stem contains herbal ingredients with phytochemicals such as flavonoids, saponins, alkaloids, and antioxidant vitamin C, which can repair cell damage and affect cell proliferation. The purpose of this study was to investigate the pancreas histology of the PCOS rats model that was supplemented with the ethanol extract of ketip banana stems. The research was a random design with K-treatment (Na-CMC 0.5%), K + (Na-CMC 0.5% + Letrozole 1.25 mg), P1 (Letrozole 1.25 mg + 50 mg/kg BW ethanol extract ketip banana stems/EEKBS), P2 (Letrozole 1.25 mg + 100 mg/kg BW doses), and P3 (Letrozole 1.25 mg + 150 mg/kg BW doses). Treatments were given by gavage method for 20 days. Pancreatic histology were prepared by the paraffin method by hematoxyn-eosin dyes. Parameters observed were pancreas histology, Langerhans Island diameter, the percentage of necrosis cells. Quantitative data analyzed statistically with SPPS while qualitative data werepresented in histological images and descriptions. The results showed that the diameter of the island of Langerhans and the percentage of pancreatic necrosis cells in the PCOS model rats were influenced by the supplementation of the ethanol extract of the ketip banana stem. Histological damage of letrozole-induced pancreatic cells were repaired with ethanol extract of ketip banana stems

Keywords: *ketip banana stems, PCOS, pancreatic histology*

ABSTRACT ID: BI-08

Response of human umbilical cord mesenchymal stem proliferation during exposure to curcumin extract variations in dose and time

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Abstract

Mesenchymal stem cells can be isolated from various body tissues, including umbilical cord tissue or mesenchymal stem cells (hUC-MSC). hUC-MSC cells have various important features, such as immunomodulators and low immunogenicity. Efforts to explore the potential of hUC-MSC cells cannot be separated from the expansion of these cells with in vitro culture techniques. In vitro culture must be able to maintain the characteristics and functional properties of hUC-MSC cells so that they retain their natural abilities. However, in vitro culture often causes cells to be stressed during the culture procedure. They lead to cell senescence and apoptosis and reduce the growth and proliferative ability of hUC-MSC cells. Curcumin is an active compound from turmeric and can be extracted from the rhizome plant Curcuma longa L. Its potential has been extensively studied as a therapeutic agent due to its activity targeting various molecular signaling pathways. In contrast, the proliferation of hUC MSC cells is needed to support the success of therapy. This study proved that curcumin at a dose of < 10 M could maintain the proliferation of hUC-MSC at 72 hours and 168 hours of exposure. Meanwhile, curcumin at concentrations of 0.5 M and 1 M significantly increased the proliferation of hUC-MSC cultures at 72 hours to 168 hours of exposure. This finding can be considered for using curcumin as a culture supplement to maintain growth and proliferation in the in vitro culture of hUC-MSC cells.

Keywords: *hUC-MSC, curcumin, cell culture, mesenchymal, proliferation*

ABSTRACT ID: BI-09

Elucidation and antibacterial of kayu manis (*Cinnamomum burmanni* Blume) as a biopreservative in processed sate lilit of food, specifically Bali

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Abstract

Meat (the main ingredient of Balinese sate lilit) is easily contaminated by *Escherechia coli* O157:H7. These bacteria can cause disease and reduce the quality of the sate lilit. Application of synthetic preservatives in the sate lilit making may cause many drawbacks. Therefore, there is a need to investigate natural ingredients as bio-preservatives. The main aim of this study was to determine the potential of cinnamon leaf extract (*Cinnamomum burmanni* Blume) in inhibiting *E. coli* O157:H7. Cinnamon extract was obtained by maceration method. Various concentrations of cinnamon extract (crude extract), 75%(w/v); 50%(w/v); 25% (w/v); 20%(w/v); 15%(w/v); 5%(w/v) and 0%(w/v) were tested for its inhibition by applying Kyrbi Bauer method. In the same method, look for MIC (Minim Inhibition Concentration). The group of compounds and the profile of active compounds were determined using phytochemical test methods, column chromatography and LCMS (Lyquid chromatography Mass Spectra). The results of the study showed that cinnamon extract was able to inhibit *E. coli* O157:H7. The diameter of the crude extract inhibition zone is 21.08±0.04 mm. The MIC was obtained, the concentration of 4%(w/v) was 6.11±0.02mm. Cinnamon extract contains a class of alkaloid compounds, steroids, phenolics, saponins and flavonoids. Fraction 4 which has the most inhibition is 25.23 mm. The active compound profile obtained 9 compounds, namely: N-(4-Methoxyphenyl)-4-methyl-1-piperazinecarbothioamide; azoxystrobin; 2-(2-Cyano-benzylsulfanyl)-4,6-diphenyl-nicotinonitrile; diphenoconazole; Octoxinol-2; N-(4-Butylphenyl)-11-[4-(dimethylamino) phenyl]-10-methyl-8-phenyl-8,11-dihydropyrazolo[3',4':4,5]pyrimido[1,2-a] quinoxalin-6-amine; Stigmatellin Y; 2-arachidonoylglycerol; and 1-(Butylamino)-3-methyl-2-octylpyrido[1,2-a]bgensiidazole-4-carbonitrile. These results open the opportunity of cinnamon leaves to be used as an alternative biopreservative.

Keywords**:** *Bali, Cinnamomum burmanni Blume, E. coli O157:H7, sate lilit*

ABSTRACT ID: BI-10

Promising phytase activity of Indonesian Lactic Acid Bacteria isolated from meat of Peranakan Ongole

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Abstract

Phytase (myo-inositol hexakis phosphate phosphohydrolase) is an enzyme capable of hydrolyzing phytate acid (PA). The hydrolysis of PA by phytase leads to increased bioavailability of the minerals for humans or animals. Lactic acid bacteria (LAB) are considered safe phytase producers for further applications. Nevertheless, the best candidate of phytase-producing LAB remains to be explored. *Lactobacillus plantarum* IIA-1A5, *Lactobacillus acidophilus* IIA-2B4, *Enterococcus faecium* IIA-2D2, and *Pediococcus pentosaceous* IIA-2A2 are Indonesian LAB isolated from meat of *Peranakan Ongole* cattle which were proven to be excellent fermentation starters. Nevertheless, the ability of these LAB to produce phytase has never been investigated. This study aims to determine the production and activity of phytase from these Indonesian LAB. Accordingly, the LAB was grown in De Man, Rogosa, and Sharpe (MRS) broth media at 37°C for 48 hrs, yielding a total population of 9.54, 10.72, 11.39, and 11.20 log CFU/ml for IIA-1A5, IIA-2B4, IIA-2D2, and IIA-2A2 strains, respectively. The phytase activity was then assayed spectrophotometrically using the Phytase Assay Kit (K-PHYTASE) method, which revealed that only IIA-1A5 and IIA-2B4 strains exhibited detectable phytase activity of 20 and 60 mU/mL, respectively. No phytase activity was detected for IIA-2D2 and IIA-2A2. Notable, the pH and total titratable acidity of all LAB strains were not significantly different, which indicated that the phytase production by these strains might not be associated with lactic acid production. Altogether, this result demonstrated the promising use of IIA-1A5 and IIA-2B4 as novel LAB-based phytase producers.

Keywords: *Lactic acid bacteria,* Lactobacillus acidophilus*,* Lactobacillus plantarum*, phytase enzyme.*

ABSTRACT ID: BI-11

Screening and production of bacterial phosphatase enzyme isolated from Tuban mangrove soil, East Java Indonesia

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Abstract

Phosphorus (P) is the main macronutrient after nitrogen essential for organisms. Phosphate solubilizing bacteria (PSB) are a group of bacteria capable to dissolve insoluble P into soluble forms through two mechanisms, solubilization of inorganic phosphate by organic acids, and mineralization of organic phosphate by phosphatase enzymes. This study aimed to screen PSB isolated from Mangrove soil in Tuban, East Java Indonesia, identify the bacteria with the highest potential of dissolving phosphate through molecular and morphological identification, and production of phosphatase enzyme produced by the isolate. PSB screening was done by determining the halo zone produced by 20 bacteria on Pikovskaya Agar. Phosphatase activity was assayed according to the method outlined by Tabatabai and Bremner (1969). Protein concentration was measured by the method of Lowry *et al*., (1951). Production of phosphatase enzyme was done by using Pikovskaya Broth containing tricalcium phosphate as P source. The results showed that TBN13 produced the highest phosphate dissolving index with a value of 4.89. Molecular identification using 16S rRNA revealed that TBN13 was *Bacillus cereus*. The highest phosphatase enzyme produced by the isolate was measured at 168 hours of incubation with an average enzyme activity of 59.93 U/ml and enzyme specific activity of 0.044 U/mg. During 168 hours of incubation, the culture pH increased from 4.81 to 5.66 accompanied by a decrease in cell numbers. The exponential phase occurs at 120 hours of incubation. This indicated that the isolate produced phosphatase enzymes on Pikovskaya Broth after the exponential phase.

Keywords: *acid phosphatase, Bacillus cereus, enzyme production, mangrove soil*

ABSTRACT ID: BI-12

Potential of lactic acid bacteria (vaginal secrete isolates) to inhibit *Candida albicans* ATCC10231

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Abstract

Candida albicans, the causative agent of candidiasis, has been widely reported to show its high prevalence in the last decade. This opportunistic pathogenic agent has also shown resistance on various antifungi and an increase in its infection capacity. This has lead to development of alternative methods to control such fungal pathogen. The use of lactic acid bacteria (LAB) to control such pathogen appears to be the most preferable alternative with lowest risk. The main objectives of this research were to isolate, screen, and identify potential LABs inhibitory to *C. albicans*, with a view to develop a novel therapy for candidiasis infection. The main source of these LABs was vaginal secrete of healthy women. Isolation of LABs was conducted on MRSA medium supplemented with BCP indictor, and followed by screening of potential LABs on the same medium by applying dual culture assays, to indicate their antagonistic activity against such pathogen. Identification of the most potential LAB was conducted by sequencing and alignment of its 16s rDNA with those deposited in the GeneBank. More than 50 LAB isolates were successfully isolated, and 15 isolates showed in vitro antagonistic activity against *C. albicans* ATCC10231, with various degree of inhibition. All LAB isolates were not inhibited by flukonazole (the most commonly used antifungi in the candidiasis treatment), indicating that they are potential for use synergically in the candidiasis therapies. The best LAB isolate was identified as *Lacticaseibacillus paracasei*.

Keywords: *Antibiotics,* Candida albicans*, candidiasis, pathogens, women reproductive tract*

ABSTRACT ID: BI-13

In vitro inhibition of lactic acid bacteria isolated from vaginal secrete of healty women against *Candida albicans* ATCC 10231

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Abstract

Candidiasis is an infectious disease caused by *Candida albicans* with a relatively high prevalence. This pathogen has shown resistance to various antifungal and an increase in its pathogenicity. Therefore, alternative treatments for this disease without increasing the pathogen's resistance rate are very important. The most emerging alternative solution to control the growth of *C. albicans* is the use of lactic acid bacteria (LAB). The main objectives of this research were to isolate, screen, and identify potential LAB strains to be used to control candidiasis. The source of LAB isolates was vaginal secrete of healthy women due to LAB, especially *Lactobacilli*, are natural vaginal microbiota. Some 33 LAB isolates were isolated and showed LAB characteristics, such as round, flat edges, and white-yellowish colonies on MRSA, Gram-positive cocci or bacilli microscopic morphology, produce acidic compound, and a negative result in catalase test. Screening of potential LABs was conducted by applying dual culture assays on MRSA medium to indicate their antagonistic activity against *C. albicans*. In the in vitro dual culture assays, 8 isolates inhibited the growth of *C. albicans* ATCC 10231 with various degree of inhibition. All of these isolates were also resistant to fluconazole (the most commonly used antifungal in the candidiasis treatment), indicating the possibilities to apply them synergically with fluconazole in the candidiasis therapy. The LAB isolate that showed the best antagonistic activity against *C. albicans* was identified as *Lacticaseibacillus paracasei* following sequencing of its 16s rDNA.

Keywords: *antifungal, Candida albicans, lactic acid bacteria, vaginal secrete of healthy women*

ABSTRACT ID: BI-14

In vitro test of the role of dark septate endophytic fungi (*Leptodontidium orchidicola, Podospora glutinans*, and *Zopfiella latipes*) to promote tomato and rice plant growth in different nitrogen sources

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Abstract

Nitrogen is an abundant element in the atmosphere but plants cannot uptake it directly, it requires the help of microbes for nitrogen fixation into a form available for plants. This study was to confirm the ability of *L. orchidicola*, *P. glutinans* and *Z. latipes*in promoting tomato plant growth and *L. orchidicola* in promoting rice plant growth under different nitrogen sources.The experiments carried out included 1) test of DSEs effect on tomato growth under organic nitrogen source, 2) test of DSEs effect on tomato growth in different nitrogen sources, 3) test of *L. orchidicola* effect to rice growth with inorganic and organic nitrogen sources. All DSEs promoted tomato growth under organic nitrogen source compared to control. *Leptodontidium orchidicola* increased the tomato plant's dry weight significantly compared to control using $NaNO_3$ as a nitrogen source. *Podospora glutinans* increased the tomato plant's dry weight significantly compared to control using valine as a nitrogen source. *Leptodontidium orchidola* promoted the rice growth significantly compared to the controlusing NaNO3 and didn't increase rice growth compared to control when corn steep liquor as organic nitrogen source. This *in vitro* experiment illustrated that each DSE has its own preference to provide nitrogen for the plant growth from various nitrogen sources. Information related to the preference of nitrogen sources transferred from the growth media to the host plant by DSE is very important in symbiotic technology to efficiently uptake nutrients such as nitrogen nutrients from both organic and inorganic sources in the future.

Keywords: *corn steep liquor, nutrient efficiency, organic nitrogen, symbiotic technology, valine*

ABSTRACT ID: BI-15

Optimization of cultural condition and downstream process for microbial surfactant produced by *Achromobacter xylosoxidans* BP(1)5

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Abstract

Amphiphilic compounds are the most sought-after compounds in the 21st century because they can be applied in various fields. *Achromobacter* was able to produce biosurfactants, amphiphilic compounds that are environmentally friendly. This genus is generally reported to produce glycolipid and lipopeptide biosurfactants which are known for their potential application as antimicrobial and oil removal agents. With the ever-growing increase in the demands of biosurfactants, this research was focused on optimizing the culture conditions through the one-factor-at-a-time (OFAT) approach and finding an effective downstream process for production of biosurfactants from *Achromobacter xylosoxidans* BP(1)5. This research was conducted on basal medium minimal salt medium (MSM) using the OFAT approach by changing the parameters of incubation time, carbon source, nitrogen source, and C/N ratio. After obtaining optimal culture conditions, it is continued by finding the best extraction method using various types of organic solvents. The research revealed that the optimal conditions for the biosurfactants production were using a glucose as carbon source and yeast extract at a C/N ratio of 6/1 for 72 hours of incubation, resulting in dry biomass of 2.31 ± 0.41 g/L with a surface tension reduction and emulsification activity 20.81 ± 1.63 mN/m and 51.43 ± 4.97%. The higher biosurfactant yield was attained using chloroform: methanol: acetone having 2.32 g/L biosurfactant and 3000 mg/L critical micelle concentration (CMC) with surface tension reduction of 31.29 ± 0.02 mN/m. This research can be used as an initial reference in simulating the design of fermentation to produce biosurfactants on a large scale.

Keywords: *Achromobacter xylosoxidans,* one-factor-at-a-time (OFAT), biosurfactant, extraction method, green product

ABSTRACT ID: BI-16

The Ability of *Enterobacter aerogenes*, *Pseudomonas maculicola*, and *Pseudomonas putida* to Remediate Heavy Metal Pollution

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Abstract

Heavy metal contamination leads to soil degradation that reduces soil fertility and may even be hazardous to plants. Bioremediation is affordable, efficient, and environmentally friendly to remove heavy metal pollutants. This study aimed to determine the bioremediation potential of Hg and multi-metal Hg, Cd, Cr, and Pb using the mercury-resistant bacteria *Enterobacter aerogenes* R3.24, *Pseudomonas maculicola* R4.27, and *Pseudomonas putida* R2.13. The capacity of bacteria to remove heavy metal was evaluated in the minimal broth medium enriched with Hg to remediate single metal and a combination of Hg, Cd, Cr, and Pb metals to remediate multi-metal. According to the results, bacteria were tolerant to Pb and Cu at 1700–1800 ppm, Cd at 400–500 ppm, and Cr at 400–700 ppm. During an incubation period of seven days, the consortium of the three bacterial strains may be able to remove 82.8% of Hg from the presence of 1 ppm and be more effective than individual ones. After seven days of incubation, *P. maculicola* R4.27 was able to eliminate 94.7% Hg, 73.5% Cd, 37.8% Cr, and 99.8% Pb from the initial combination (ppm) 1.0 Hg, 1.0 Cd, 5.0 Cr, and 200 Pb. As heavy metal bioremediation agents to purge contaminated environments, these bacteria show promise.

Keywords: *bioremediation, heavy metals, mercury-resistant bacteria*

ABSTRACT ID: BI-17

Optimization of *Saccharomyces cerevisiae* starter and Fermentation Time in Green Bean Robusta Coffee to Produce Antioxidant Activities

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Abstract

Green Bean of Robusta Coffee (GBRC) contains phenolic compounds such as chlorogenic acid, ferulic acid, and caffeic acid which have antioxidant activity. Fermentation has been reported successful to increase the antioxidant activity. Two factors that can affect the fermentation process are starter concentration and fermentation time. In this study, optimization of starter concentration and time in GBRC fermentation was carried out. The concentration variations of the starter used were 1%, 1,5%, 2%, 2,5% and 3% while the time variations used were 2, 4, 6, 8, 10, and 12 days. The results of GBRC fermentation and ferment filtrate were tested for antioxidant activity using the DPPH method. Based on the results of the study, GBRC and fermented ferment filtrate with variations in yeast concentrations of 1%, 1,5%, 2%, 2,5% and 3% experienced a decrease in IC_{50} value from fermentation day 0 to 6 then there was an increase in the value of IC_{50} on fermentation day 8 to 12. The greater the concentration of yeast, the greater the antioxidant activity of GBRC which was indicated by a decrease in the IC_{50} value at each variation concentration on the same fermentation time. When compared between the antioxidant activity of GBRC and ferment filtrate, the antioxidant activity of ferment filtrate is stronger than the activity of GBRC. Data analysis to determine the optimum point of the variable yeast concentration and fermentation time was carried out using the Response Surface Methodology (RSM) method. The optimum point of yeast concentration and fermentation time for the GBRC was 3,158% and 6,814 days with a predicted IC_{50} value (%v/v) at the optimum point is 0,0607% v/v while the ferment filtrate it was 3,049% and 6,515 days with the predicted IC_{50} value (%v/v) at the optimum point is 0,0151% v/v.

Keywords: *antioxidants, fermentation, ferment filtrate, green bean coffee robusta, phenolic compounds*

ABSTRACT ID: BI-18

Fungal propagation of *Glomus* spp. indigenous Bali on different soil types

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Abstract

Endomycorrhizal *Glomus* spp is an obligate fungus potential as a biofertilizer for plants cultivated on dry land. For spore propagation, the fungus Glomus spp. can be inoculated on a suitable soil medium. Types of soil that are sufficiently loose can be used as a medium for the propagation of endomycorrhizal spores. Research on the propagation of indigenous endomycorrhizae of Bali using three different types of soil (sand-soil and zeolite-soil and clay) was carried out the Plant Taxonomy (Mycology) laboratory, Biology Department and Greenhouse Biology Study Program, FMIPA Udayana University. The parameters observed were: the number of Glomus spp. spores in three different soil media, the percentage of fungal colonization on the roots of the host plant and the wet and dry weight of the roots of the host plant. The results showed that the propagation of Glomus spp. resulted in a fairly high variation in the three soil media used. In soil-sand media, and zeolite-soil resulted in colonization on host plant roots, root weight and high spore count compared to *Glomus* spp propagation on clay soil media. Spores of Glomus spp. were seen to have faster germination rate, faster colonization and higher number of spores than the other two soil types. Based on the results of the study, it can be concluded that Glomus spp. produces the best propagation on sandy soils and zeolite soils but is low on clay soils.

Keywords*: colonization* Glomus *spp., propagation, number of spores, root weight*

ABSTRACT ID: BI-19

Bio efficacy of frog skin microbiota as biological control agents against chili anthracnose disease

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Abstract

Amphibian skin e.g., frog carry bacterial symbionts on their skin that protect the frog from invasion of pathogen infection. This study aimed to evaluate antifungal activity of five bacterial skin frog (namely KSMD3; KSMD9; KSMD10; KSMV12; KSMV15) of Indonesian origin, *Fejervarya limnocharis,* against phytopathogen (*Colletotrichum capsici)*. Primary screening for their antifungal activity was performed using dual culture method on nutrient agar contained 2% of dextrose. The alteration of hyphal morphology on media and the detached chili fruit bioassay were observed. Isolate of KSMD3 was selected based on its significant performance in inhibiting the growth of the chili anthracnose pathogen, *C. capsici*. In addition, the KSMD3 showed low severity of disease incidence on detached chili fruit. Based on the analysis of 16S rDNA, the isolate of KSMD3 was identified as member of genera of *Pseudomonas.*

Keywords: *antifungal activity,* Colletotrichum *sp. bioassay, Indonesian frog,* Pseudomonas *sp.*

ABSTRACT ID: BI-20

Screening of endophytic bacteria that produce antimicrobial compounds in *Rhizophora stylosa* mangroves from Enggano Island

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Abstract

Enggano Island has a good mangrove forest where one of the tree species composing this mangrove forest is *Rhizophora stylosa.* This study aimed to obtain endophytic bacterial isolates from *Rhizophora stylosa* and determine the potential of endophytic bacteria from the mangrove plant *Rhizophora stylosa* against human pathogenic microbes *Escherichia coli*, and *Salmonella typhi*. The procedure began with the isolation of Endophytic Bacteria *Rhizophora stylosa* bacteria was using the grinding method which after the sample was sterilized and then crushed, then mixed into a sterile liquid to proceed to graded dilution and then cultured. Cultured bacterial isolates will be subjected to Gram staining, and antimicrobial activity tests against pathogens *Escherichia coli* and *Salmonella typhi*. The results showed that 19 isolates of endophytic mangrove *Rhizophora stylosa* were successfully isolated. Some of those isolates, namely ASS 2, BRSE 10, DRSE 13, DRSE 14, DRSE 15, DRSE 16, DRSE 17, DRSE 18, and DRSE 19 inhibited the growth of pathogenic *Escherichia coli*. ASS 2 isolate was the best isolate to inhibit such a pathogen with an inhibition zone of 11.9 mm. Other isolates, such as ASS 2, 6, BRSE 10, 11, and DRSE 14, 15, 16, 17, 18, and 19 were found to inhibit the growth of *Salmonella typhi*. DRSE isolate showed the best result with an inhibition zone of 7.58 mm.

Keywords: *endophytic bacteria, Enggano Island, mangrove* Rhizopora stylosa

ABSTRACT ID: BI-21

Evaluation of antimicrobial activity and probiotic abilities of *Rhodotorula mucilaginosa* RG-PK20 strain

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Abstract

Probiotics are good microbes capability to stimulate the growth of microbiota in the gastrointestinal system. A group of yeasts that have been reported to have potential as probiotics is the genus Rhodotorula. *Rhodotorula mucilaginosa* in Indonesia itself has not been reported by way of being explored as a probiotic candidate. This yeast was isolated from natural yeast fermented raisins. The main aim of this study was to determine the probiotic potential and antimicrobial activity of active compound produced by *Rhodotorula mucilaginosa* RG-PK20. Potential probiotics were measured by their ability to grow in bile salt and low pH media, while the disk-diffusion method used to evaluate their antimicrobial activity. The results showed that *Rhodotorula mucilaginosa* RG-PK20 strain was found to have potential as a probiotic due to its ability to survive well in low pH conditions (2, 3, 5, and 6) and high levels of bile salt (0.3%, 0.5%, 1%, and 2%). *Rhodotorula mucilaginosa* RG-PK20 also showed resistance properties aganinst several antibiotics including tetracycline, chloramphenicol, Amoxycillin, streptomycin, and ciprofloxacin exposed at a concentration of 5 ppm. Ethyl acetate extract of cell-free supernatant of *Rhodotorula mucilaginosa* RG-PK20 strain showed high antimicrobial activity against *Escherichia coli, Listeria monocytogene, Staphylococcus Aureus*, and *Salmonella enteridis*, but low activity in inhibiting the growth of *Pseudomonas Auroginosa, Salmonella enteridis*, and *Salmonella Typhimurium*

Keywords: *antimicrobial, bile salt, probiotics,* Rhodotorula mucilaginosa

ABSTRACT ID: BI-22

Optimization and identification of BL-20 and PT-20 yeast isolates as protease producing candidates

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Abstract

Natural yeasts were obtained from fermented fruits and vegetables without addition of artificial additives. This research was motivated by yeast strains BL-20 and PT-20 isolated from natural yeast of raisin fermentation process, previously carried out. The purpose of this study was to obtain potential yeast isolates from the BL-20 and PT-20 strains as yeast candidates with protease enzyme activity. The stages of this study were enrichment of BL-20 and PT-20 isolates, isolation of BL-20 and PT-20 isolates' DNA, Qualitative tests of protease enzyme activity, Designing of specific primers for protease genes, Detection of protease genes with specific primers, Molecular identification of the isolates using ITS-1 and ITS-4 primers, and Sequencing analysis. The results of the qualitative tests using skim milk media showed an inhibition zone around the BL20 isolate. Of these two yeast isolates, the BL-20 isolate was detected to have a protease gene which was confirmed by the appearance of DNA bands with molecular sizes of ±1200 bp and 1000bp, following amplification of such genes using (Pu and Pd) and (Pro-F and Pro-R) primers, respectively. Based on sequencing analysis data, the isolates of BL-20 dan PT-20 identified as *Candida parapsilosis* with 95.20% homology (but, phylogenetically closely related to *Pichia kurdriavzevii* and, *Candida orthopsilosis*, respectively with 95.91% homology (PT-20 Isolate).

Keywords: *fermented fruits, ITS primer, natural yeast, protease enzyme*

ABSTRACT ID: BI-23

Potential of Bacterial Volatile Compounds (BVCs) of *Enterobacter asburiae* as an induction of rice plants resistance (*Oryza sativa* L) against *Curvularia* Leaf Spot Disease

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Abstract

The purpose of this study was to find the BVCs-produce compounds in the *Enterobacter asburiae* formula that have anti-fungal activity and knowing the effectiveness of *E. asburiae* in increasing the resistance of rice plants to *Curvularia verruculosa* fungal infections that cause leaf spot disease. The determination phase in this study was on the identification of compounds produced by *E. asburiae* formula which were thought to produce anti-fungal volatile compounds. Identification of compounds using GCMS (Gas Chromatography Mass Spectroscopy). The study used the formula for *E. asburiae* bacteria with concentration of 2%, concentration of 1.33%, concentration of 1% and concentration of 0.8%. The results proved that all treatments of *E. asburiae* formula were effective in controlling *Curvularia* leaf spot disease by reducing the intensity of the disease in the leaves, besides that the *E. asburiae* formula also increased the height, amount and leaves area of *Oryza sativa* L.

Keywords: *rice*, *induce resistance*, *PGPR, plant disease*

ABSTRACT ID: BI-24

Effect of lead (Pb) concentration on stomatal density of *Bougainvillea spectabilis* cultivar in Bojonegoro Regency

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Abstract

Motor vehicle fuel emissions are one of the causes of air pollution in Bojonegoro Regency. One pollutant that causes air pollution is lead (Pb). Bougainvillea (*Bougainvillea spectabillis*) plants have the ability as an air biofilter that can absorb Pb particulates in the air. This study aims to determine the Pb content, stomatal density, and correlation of Pb content to leaf stomatal density of *B. spectabillis* cv. Afterglow, *B. spectabillis* cv. Barbara Karst, and *B. spectabillis* cv. Poultoni. Sampling was carried out at the road locations which had a different level of motor vehicle activity, namely on the crowded road (Jl. Ahmad Yani), moderate (Jl. Sumur Agung), and quiet (Jl. Poros Desa Bungur). This study included observational research that used data analysis with descriptive and quantitative methods with SPSS. The research was conducted in January—May 2019. The Pb content was analyzed using AAS at the Surabaya Industrial Research and Consultation Center (BPKI). The Pb content of leaf *B. spectabillis* cultivars in three road locations in Bojonegoro Regency ranged from 0,16—5,02 ppm. The leaf stomatal density of *B. spectabillis* cultivars in three road locations in Bojonegoro Regency ranged from 153—371 stomata/mm^2. The correlation of Pb content to stomatal density of *B. spectabillis* cultivars is 44% and positively related to the degree of moderate correlation.

Keywords: *lead* (Pb), *stomatal density, bougainvillea leaf, air pollution*

ABSTRACT ID: BI-25

Eco-enzyme as liquid organic fertilizer for plants growth

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Abstract

Eco-enzymes can be produced from kitchen waste in the form of rind of fresh fruit and vegetable peels and fermented with molasses or brown sugar solution for a minimum period of three months. The eco-enzyme solution can be used for health, for example as a disinfectant (floor cleaner and dish soap, bath soap) and for agriculture as organic fertilizer and natural pesticide. In this study, organic sources about 3 portion (300 g) contained rind from papaya, banana, orange/citrus, pineapple, and some vegetables, added 1 portion (100 g) of palm sugar diluted in 1 L (1000 mL) of water. After 3 months, the eco-enzyme solution was analyzed for its element of fertilizer. Based on laboratory analysis, eco-enzyme with organic materials such as pineapple peel, orange peel, papaya peel, banana peel and vegetables obtained total nutrients N 0.06%, P available 109.36 ppm and K available 113 ppm, C-organic 1.95% with conductivity Electrical 3.86 mmhos/cm.

Keywords: *bio-fertilizer, organic waste, fermentation, palm sugar*

ABSTRACT ID: BI-26

Responses of soil respiration and organic carbon to organic soil amendments in upland paddy

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Abstract

Carbon dioxide (CO_2) is a significant greenhouse gas (GHG) accounting for 60% of the total greenhouse effect. Soil respiration is a measure of the CO_2 released from soil. Rice was the largest contributing plant commodity of total emission by 12%. In the event of growing threats of global warming due to GHG emissions, reducing CO_2 emission by sequestering C in the soil is of supreme concernment. Improved management practices can rebuild C stocks in agricultural soils and help mitigate CO_2 emissions. A field study to assess how organic soil amendments influence soil respiration, C-organic content, and soil properties was conducted in upland paddy field. Treatments were: chemical fertilizer (F1), combination of chemical fertilizer and cow dung manure (F2), chemical fertilizer and vermicompost (F3), chemical fertilizer and liquid vermicompost powder (F4), cow dung manure (F5), vermicompost (F6) and liquid vermicompost powder (F7). All treatments tested almost had the same pattern of respiration rates starting before the application of the organic soil amendment until three months after planting. The highest respiration rate was found at 1 month after planting. Soil amendment (F4 and F7) had the lowest soil respiration rates in some measurements. The highest organic C content at three months after planting was found in the F6 and F4 treatments. The most influential factor on the respiration rate are soil moisture content and soil temperature. These results suggest that the viability of vermicompost and liquid vermicompost powder either in combination with chemical fertilizers or alone as a soil amendment for maintaining organic soil Carbon in the short-term.

Keywords: *soil management, organic fertilizer, CO_2 emission, soil respiration, paddy field*

ABSTRACT ID: BI-27

Morphometric characteristics of *Enhalus acoroides* at Sanur Beach, Semawang Beach and Samuh Beach, Bali

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Abstract

Seagrasses function as primary producers in marine ecosystems and as spawning grounds and shelters for marine biota. *Enlahus acoroides* is a species of seagrass that is spread in the waters east and southeast of Bali, from Sanur Beach to Nusa Dua Beach. As a response to its environment, seagrass is known to be capable of developing phenotypic plasticity through morphometric variation. This study aimed to analyze differences in morphometry of seagrass *E. acoroides* in Sanur Beach, Semawang Beach and Samuh Beach, Bali. To collect samples, two transect lines were drawn 100 m away from the shoreline, perpendicular, with a 50 m observation distance between each transect. Seagrass was rinsed to remove any sediment. On each specimen of the seagrass, morphometric measures were taken including the measurement of above ground and below ground characteristics. The leaf sheath length, leaf length, leaf width and the highest number of leaves were found in *E. acoroides* growing on Semawang Beach, while the smallest was found in *E. acoroides* growing on Sanur Beach. The higest diameter of rhizome was found in *E. acoroides* from Semawang Beach but it was only slightlty different with that at Samuh Beach. The highest root length was found in Enhalus acoroides at Samuh Beach. This is related to the substrate where *E. acoroides* grows. The type of substrate is muddy sand at Semawang Beach and Samuh Beach, while at Segara Beach, the substrate is rocky sand.

Keywords: *above ground, below ground, morphometry, seagrass, substrate*

ABSTRACT ID: BI-28

Stomatal density and morphological analyses of several orchid at Bali Botanic Garden

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Abstract

Orchids are ornamental plants that have high commercial value and are unique and highly aesthetics. This drives the increase of exploitation of orchids and decreases their presence in nature. Therefore, a comprehensive conservation strategy is needed. Conservation efforts require information on genetic diversity which can be done based on morphological and anatomical characters. The purpose of this study was to analyze the morphology and stomatal density of several orchid plants from the Bali "Eka Karya" Botanic Garden. The methods used included observation on shape and colour of leaf, leaf size, stem diameter, and the type of this orchid plant, while the stomata observation was carried out using replica method by rubbing clear nail polish on the lower surface of orchid leaves. Determination of stomatal density was done by dividing the total number of stomata by the field of view on a microscope. Results showed that out of 8 species, four species are both epiphytic and terrestrial orchids, while four other species are epiphytic orchids. There are orchids that do not have stems but have pseudobulbs and rhizomes. Those are *Bulbophyllum lobbii, Coelogyne asperata*, and *Coelogyne swaniana*. The stem diameter of *Dendrobium macrophyllum*, *Dendrobium spathilingue*, *Eria verruculosa*, and *Phaius pauciflorus* are in the range of 2-3 cm, while stem diameters of *Trichotosia ferox* reaches 6 cm. The stomatal density of the eight species is low, with anomocytic and parasitic types of stomata. Species that have anomocytic stomata type are *Dendrobium macrophyllum, Dendrobium spathilingue, Bulbophyllum lobbii, Coelogyne swaniana*, and *Phaius pauciflorus*, while species that have parasitic stomata type are *Eria verruculosa, Trichotosia ferox*, and *Coelogyne asperata*.

Keywords: *characters, description, morphology, orchid, stomata*

ABSTRACT ID: BI-29

Formulation and evaluation of red dragon fruit skin gel

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Abstract

Red dragon fruit has high antioxidant activity. To obtain maximum effect with more practical use, needs to be formulated into gel preparations. This study aims to determine the formula of red dragon fruit gel (RDFG) that meets the requirements of physical properties and stablility in storage. The red dragon fruit was squeezed using a juicer and thickened on the stove to form 8% extract. The RDGF was made in 3 formulas with concentration ratio of Carbopol 940:Trietahanolamine (TEA) as follows: F1 (0.5:0.3)% w/w, F2 (1.2:0.7)% w/w, and F3 (2:1,2)% w/w. Gel were evaluated for physical properties using organoleptic observations, pH tests, spread diameter, adhesion tests, and viscosity tests. The best formula was tested for stability in 3 cycles with 3 different temperature conditions, namely refrigerator temperature (2-8˚C), room temperature (15-30˚C), and climatic chamber temperature (40˚C) with 75% relative humidity. The results showed that the best formula of RDFG was F2 (1.2:0.7) %w/w with a clear purplish red color, distinctive aroma, fairly thick consistency, homogeneous, pH 5.33 ± 0.02, diameter of spread 5.20 ± 0.20 cm, adhesion 18.45 ± 0.89 seconds, and viscosity 3112.47 ±177.90 cps.

Keywords: *red dragon fruit, gel, Carbopol 940, TEA, physical skin properties*

ABSTRACT ID: BI-30

Diversity of mollusks for ecotourism attractions in the mangrove ecosystem of Nusa Lembongan, Bali-Indonesia

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Abstract

The mangrove forest of Nusa Lembongan, which covers an area of 202 ha, is one of the protected forests that can be used for ecotourism activities. In developing the mangrove ecosystem for ecotourism activities in the Nusa Lembongan mangroves, data on the diversity of mangroves, mollusks, crustaceans and bird diversity are needed. This study aims to identify and describe the species of mollusks and the use of their habitats. Sampling was carried out at seven mangrove locations using the square method. Mollusk specimens identified in the Laboratory of Animal Taxonomy, Biology Study Program, Faculty of Mathematics and Natural Sciences, Udayana University. Identification of molluscs based on morphological characters. The diversity of mollusks was calculated by the Shanon-Wiener diversity index. The results showed that 22 species of mollusks were found, consisting of 17 species of class Gastropod and 5 species of class Bivalvia. There are only a few species whose presence is quite dominant, including *Littoria scabra* (mangrove periwinkle) a density of 5.68 individuals/m^2, *Terebralia sulcata* (sulcate swamp cerith) a density of 2.04 individuals/m^2 and *Cerithidea obtusa* (mud creeper) density 1.44 individuals/m^2.The diversity index of mollusk is 2.67 and the evenness index is 0.86. Species diversity is categorized as moderate and high evenness, this indicates that the condition of the Nusa Lembongan mangrove ecosystem is in a good/steady category. The existence of molluscs, observed activities, interactions in the habitat are attractive attractions for ecotourism activities.

Keywords: *Mangrove forest, Nusa Lembongan, diversity, mollusks, Ecotourism.*

ABSTRACT ID: BI-31

Species of birds in Sidey, Warmare and Maruni at the Regency Manokwari

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Abstract

This study aims to determine the number of bird species and the conservation status of birds found in the logged-over secondary forests and former gardens of Sidey, Warmare and Maruni. This observation uses the point count method (point method); each observation location consists of 4 paths with length of 1 km. Each path has 5 observation points where the observation radius is 25 m; the distance between the observation points is 200 meters. The results of this study revealed that there were 54 species of birds distributed in Sidey, 25 species in Warmare and 26 species in Maruni. There are 28 endemic bird species of New Guinea (EnNG), 2 species of migratory birds from Australia (AU/P Migrants) which became permanent residence, 3 species of birds recorded in Appendix II of CITES and 8 species of protected birds based on Permenhut P.106, 2018.

Keywords: *Birds, endemic, conservation, Manokwari*

ABSTRACT ID: BI-32

Vegetation management in the Perancak Mangrove Ecotourism Area, Jembrana

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Abstract

The Perancak mangrove forest is one of the important supports for mangrove ecotourism in Perancak as an ecosystem that functions ecologically, economically and socially. As an effort to preserve the coast in a sustainable manner. This research was conducted for 3 months (May-July 2022), in a pure stand of Perancak mangrove forest covering an area of 10 Ha, with the sampling technique carried out on true mangroves and associated mangroves by purposive sampling. The flora sampling method was carried out using the quadrant method by calculating the important value index, diversity index and species distribution pattern. The research results included true mangroves and associated mangroves. True mangroves consist of 13 species, 1367 individuals, dominated by *Rhyzophora stylosa*, with a total important value index = 299.86% (classified as stable), Diversity Index 1.1192 and distribution pattern = 0.548 (vegetation is stable and uniform). The association mangrove consists of 13 species, 649 individuals, dominated by *Terminalia cattapa.* Significant value index = 297.892 %, Diversity Index = 0.9438 and species distribution pattern = 0.73 i.e. vegetation that grows is relatively uniform. The results of the analysis for the 5 soil samples for total N, available P and K and organic C, all supported the growth of mangroves. The development of true mangroves and associations is the main supporting factor for the development of the tourism area in the Perancak Jembrana Ecotourism area which is now developing into a Coastal Park developed by the Perancak Village community.

Keywords: *ecotourism, mangrove, Perancak, beach park*

ABSTRACT ID: BI-33

Ecological quality index of seagrass at Mertasegara (Sanur) and Terora (Nusa Dua) Beaches

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Abstract

Seagrass meadows have widely recognized to have significant ecological services for other organisms i.e. as refuge area and the ground for feeding and spawning. Currently, the existence of seagrass beds globally is increasingly threatened due to pollution, habitat replacement for seaweed cultivation, physical damage by motor boat propellers and coastal tourism activities. Seagrass research in provincial waters Bali has been carried out by many researchers, however study on seagrass ecological quality index (SEQI) has not been carried out yet. Seagrass sampling on three perpendicular line transects (100m) at 50m intervals was applied. Collecting data were carried out by using 11 frames squared (50 X 50 cm) at each transect with interval 10 m. Variable observed are percent cover, number of stands, algae and epiphyte cover, sediment type and water turbidity. The results show that 7 species were discovered at Terora Beach, with percent cover (77,3%) and SEQI was0,71. While at Mertasegara beach (Sanur) was discovered 6 species, with percent cover (69,3%) and SEQI was 0,82. In accordance with the criterion of Environment and Forestry Ministry no 200/ 2004 the status of seagrass at both beaches is classified as good.

Keywords: *Seagrass, quality Index, percent cover, diversity*

ABSTRACT ID: BI-34

Potential of butterflies as ecotourist attractions in Taro Village, Tegallalang District, Gianyar Regency

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Abstract

Research on "Potential of Butterflies as Ecotour Attractions in Taro Village, Tegallalang District, Gianyar Regency" was undertaken in 2022. Objectives of this research was to find out species of butterflies in Taro Village, as well as to find out their potential as ecotourist attractions. Samples were collected through exploring the research sites and conducting interview. Butterflies sighted on site were captured (when possible) and then brought to the laboratory in Biology Study Program, Faculty of Mathematics and Natural Sciences, Udayana University for identification of the species. Results of observations were checked by species identity available on books written such as by Bland and Jaques (1978), Landman (2001), Lilies S. (1992), etc. Data on butterflies were recorded on their species and their relative numbers/frequency, and then the results were presented in tables. Data presented such as the status of butterflies (protected or not), description of the species (when available), etc. The potential of butterflies as ecotour attractions was analyzed based on the data of tourist or expert perceptions, or based on 4A criteria (Cooper, 2016). In addition, locations where in Taro butterflies have been set as tourist (ecotour) attractions, as well as how to set their products were reported (if available). Results of this research showed that there were 27 species of butterflies have been identified in Taro Village. No protected species was observed. In this village butterflies have not been used as tourist (ecotour) attractions yet, but Taro Village has potential for development of butterflies based ecotourism.

Keywords: *attraction potential, Bali, butterfly, ecotourism, Taro Village*

ABSTRACT ID: BI-35

The diversity of cinnamon plants (*Cinnamomum burmanni* Blume) that live in two different habitats, ie Belok Village, Pengang District, Badung and Bedugul Village, Baturuti District Badung, Bali

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Abstract

Cinnamon (*Cinnamomum burmanni* Blume) leaf extract can inhibit the growth of colonies, biomass and spores of plant pathogenic fungi both in vitro and ex vivo. This is because cinnamon leaves have phytochemical compounds that act as antifungal compounds. The antifungal compounds from cinnamon leaves differ from one habitat to another. Cinnamon taken in the Petang Badung area were flavonoids, steroids, phenolics, tannins, while cinnamon leaves taken from Bedugul, Baturuti district Tabanan contained alkaloids, steroids, phenolics and saponins. The content of phytochemical compounds is the result of secondary metabolism of plants. The phytochemical content of cinnamon leaves is influenced by genetic and environmental factors. Environmental factors also influence such as soil conditions, geography, temperature, humidity. This research was conducted to see the diversity of cinnamon leaves that live in two different locations. Based on this, a series of experiments will be carried out, namely the analysis of the diversity of cinnamon leaves based on PCR analysis, soil analysis, and analysis of environmental factors such as temperature, humidity. Cinnamon plant analysis using 2 different primers is the same species. Soil and climatic analysis of the 2 cinnamon plant locations were different. The content of C, N, K in Bedugul Village is higher than Belok Sidan Village. Content Soil water content in the two locations is different, especially the percentage of KU and KL. The temperature, humidity, wind speed, coordinates and altitude of the two locations are different.

Keywords: *diversity, cinnamon plant, DNA, soil, physical factors*

ABSTRACT ID: BI-36

Preliminary study of spring quality in Science Techno Park Unwira Bone Village, Nekamese District, Kupang Regency

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Abstract

Bone springs are one of the natural resources in Science Techno Park Unwira. This spring is still very natural and has not been touched by human activities. Water is a basic human need because the water to be used as drinking water must meet the requirements. This study aims to determine the presence of *E.coli* and coliform as well as to know the physical and chemical quality of water. The research method is descriptive. The results showed that bone springs microbiologically did not meet water quality standards, namely the amount of coliform as much as 494/100ml. while for the chemical parameters of nitrate: 1.0mg/L, nitrite: 3mg/L, cyanide 0.013mg/L and pesticides: negative while the physics parameters: TDS: 272mg/L, pH: 4.5, temperature: 29°C and hardness: 304mg/ L.

Keywords: *Springs, Microbiology, coliform, Physics and Chemistry*

ABSTRACT ID: BI-37

The local wisdom of Jernang Rattan by the tribe of Batin Sembilan in the Indonesia's Ecosystem Restoration Area in Jambi Sumatera

Revis Asra

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Abstract

Approximately 228 people in the area considerably native folks of Batin Sembilan. Despite have been relying on the rubber plantation, the people in the tribe Batin Sembilan also likely depend on the non-timber forest product (NTFPs) derived from the areas of Harapan Rainforest. One of the most demanding on non-timber forest product is Jernang Rattan, as likely having high economic value. This study aimed to explore usage harvest pattern and conservation of Jernang Rattan by the tribe of Batin Sembilan in the Harapan Rainforest areas. The research method was conducted through a survey sampling with six-core informants by interview section and participative observation. The qualitative data was then analyzed using statistical descriptive. The current finding found that the people in Batin Sembilan tribe straight forwardly trade the wild-type jernang rattan, that the discovered to markets in order to sustain their lives. The search of jernang rattan was normally conducted by adult men, even young men actively got involved. The harvest pattern of Jernang Rattan was carefully performed in a sustainable procedure, without destructing the trees. Moreover, the conservation of the plants was conventionally implemented with customary sanction applied for them who illegally do the tree logging in order to harvest the fruits. On the other words, the local wisdom implemented by the people in Batin Sembilan immensely support the efforts of restoration in the Harapan Rainforest.

Keywords: *Indonesia ecosystem restoration, Batin Sembilan, Jernang Rattan, local wisdom*

ABSTRACT ID: BI-38

Age structure of Sasau Fish (*Hampala macrolepidota* Kuhl van Hasselt, 1823) in Singkarak Lake

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Abstract

This study aims to determine the age structure of Sasau fish (*Hampala macrolepidota* Kuhl van Hasselt, 1823) in Singkarak Lake. Sampling was done by descriptive survey method at four stations. Research on the age structure of sasau fish using Von Bertalanffy's analysis. The results of the study of the age structure of sasau fish, the asymptotic length (L) of sasau fish was 571.2 mm with a growth rate (K) of 0.55 per year and t0= -0.135 years. This means that the theoretical age of the fish at the time of length is zero (t0) = - 0.135 per year. Von Bertalanffy's growth equation according to the total length of sasau fish is $Lt= 571.2(1-e^{0.55(t-0.135)})$.

Keywords: Hampala*, age structure, Singkarak lake, growth rate*

ABSTRACT ID: BI-39

Distribution and mineral analysis of *Pila scutata* snails at rice fields in the District of Gianyar

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Abstract

Snails is one of the fauna that inhabit the rice field habitat. The *Pila scutata* snail is one of the species in the Mollusca class which is commonly called the gondang snail and in Bali it is called the kakul. In Bali, the snail is used as an alternative protein source and also as a ritual material in certain religious ceremonies. Pila snail habitat is often invaded by *Pomacea* spp. which has a high adaptability so as to allow the decline of the Pila population throughout Southeast Asia. The existence of the snails in Bali is starting to be rare but there is no definite data regarding the snail population. The purpose of this study was to determine the distribution of the snails including population density, frequency of presence, distribution pattern and mineral composition in the rice field ecosystem, Gianyar Regency. Samples were taken at several rice fields and each location was taken in three rice fields with rice plants less than one month old. Sampling was done by making a square measuring 1 x 1 m which was placed in each corner of the rice field plot. Sampling was carried out in the morning at 06.00-10.00 WITA by directly collecting the snails contained in the square. Measurement of environmental factors was carried out every sampling. Snail samples obtained from each location were brought to the laboratory to be counted and observed for morphology. Furthermore, the snail samples were analyzed for their mineral composition. The results of the study found that the density of snails was 1.17-2.0 ind/m^2, the frequency of presence was 58.33-91.67% and the distribution pattern was regular. The range of calcium content is 90.35-122.98 mg/100g, iron 18.99-38.70 mg/100g, potassium 162.89-216.121 mg/100g, 407.08-567.96 mg/100g, copper and lead are not detected.

Keywords*: Density, mineral, rice field, snail*

ABSTRACT ID: BI-40

Feed preference of fruit bats (*Cynopterus brachyotis*)

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Abstract

This research aimed to obtain the level of fruit consumption and feed preference of fruit bats that can be used to control fruit bats without negative impact to the environment. Feed preference test was conducted in three stages. The first stage was conducted by using seven types of fruits, second stage using three highest consumed fruits from the previous test, and the third using five varieties of fruit with highest level of consumption from the previous test. These three stages of test were carried out for 14 days each stage, using the choice test method. The first stage using seven types of fruit as a treatment (banana, longan, mango, guava, papaya, water apple, and orange). The three highest level of consumption were banana 21.25 g, longan 8.69 g, and mango 8.02 g. The second stage using three highest consumed fruits from the first stage there were banana, longan, and mango. Banana remain highest with level consumption 20.22 g. The third stage using five varieties of banana (Pisang Siam, Pisang Wulih, Pisang Raja, Pisang Susu, and Pisang Ambon), based on the test results, bats consumed most Pisang Siam types with consumption 6.11 g/100 g body weight. Factors that affected of Pisang Siam consumption such as nutrients contained that include energy, protein, fats, carbohydrate, calcium, and vitamin that affects the aroma and also the texture. Pisang Siam can be used as a trap crop to protect fruit plantation with high economic value.

Keywords: *nutrients, odor and texture of fruit, Pisang Siam, trap crop.*

ABSTRACT ID: BI-41

Inventory of *Pholidota carnea* (Blume) Lindl. and it's host trees at Pengelengan Hills, Pegayaman, Buleleng, Bali

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Abstract

Pholidota carnea (Blume) Lindl. or "rattlesnake orchid " is one of the epiphytic orchids in the family O*rchidaceae.* The existence of this species in the wild tends to decline, due to changes in ecological factors, land-use practices, and *habitat loss*. Therefore, ex situ conservation is necessary. The success of ex situ orchid conservation requires knowing the types of its host trees. The study aimed to carry out an inventory of *P. carnea* (Blume) Lindl. and its host trees at Pengelengan Hills Area, Pegayaman, Buleleng – Bali. An exploration method was applied in the research. There were 223 individuals of *P. carnea* found in Pengelengan Hills area. The highest number was present at an altitude of 1551-1600 m above sea level (m asl.) (159), followed by those at 1501-1550 m asl (43) and at 1450-1500 m asl (21) respectively. Meanwhile, 27 host trees were found which consisted of 10 species and eight families. Most *P. carnea* were found on *Michelia champaca* (L.) Baill. ex Pierre (Cempaka; 47), followed by those on *Leucaena leucocephala* (Lam.) de Wit (Lamtoro; 27), *Erythrina subumbrans* (Hassk.) Merr (Dadap; 25) and *Bischorfia javanica* Blume (Gintungan; 24).

Keywords: Pholidota carnea *(Blume) Lindl., inventory, host trees, Pengelengan Hills*

ABSTRACT ID: BI-42

Inventory of dragonfly types in Juwet Rice Field, in Abiansemal, Badung, Bali, after concrete irrigation channels

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Abstract

Rice field ecosystem contains various kinds of insect diversity in it, one of which is dragonfly (Odonata). Dragonflies (Odonata) are predatory insects which are natural enemies for various pests of rice plants. This study aims to determine the abundance, distribution pattern and habitat type of dragonflies in the rice fields of Juwet, Abiansemal after the irrigation canal underwent modernization. The research method used is descriptive method by direct collection using insect nets for identification. The collection is carried out by active exploration around the Juwet rice fields and surrounding areas. The results showed that the number of dragonfly species found around Juwet rice fields was 17 species belonging to 3 families with relative abundances of *Orthetrum sabina* 39.6%, *Pantala flavescens* 19.5%, *Psudagrion rubriceps* 6.9%, *Copera marginipes, Psudagrion microcephalum, Prodasineura autumnalis 3.9% each, Crocothermis servilia, Libellago lineata, Agriocnemis femina, Agriocnemis pygmaea* mass 3.0% each, *Potamarcha congener, Brachythemis contaminate, Psudagrion pruinosum* 2% each, *Tholymis tillarga, Orthemis glaucumri, Neurothemis glaucumri.* The *Trivialis diplacodes* are 1% each. The distribution pattern of dragonflies is 13 clustered species and 4 species are random. While the type of habitat is shrubs and trees.

Keywords: *Dragonfly, irrigation, nymph, insect diversity*

ABSTRACT ID: BI-43

Morphological characterization of water mold causing Saprolegniasis in fish from Mina Kepis Sleman Yogyakarta

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Abstract

Some water molds can be identified from fish saprolegniasis. They are can be infected with the common freshwater fish, especially growth as cottony mycelium in the skin, fins, and gills. At least two genera commonly associated with fish saprolegniasis, are *Saprolegnia* and *Achlya*. Morphological characterization needs to do to identify the water molds associated with fish saprolegniasis. Morphological characterization of water molds that causes saprolegniasis in fish from Mina Kepis Sleman, Yogyakarta have be done. The samples of water mold were collected in January 2022 and then cultured until to be pure isolates with glucose yeast extract agar media. The isolates are characterized by the character of mycelium, hypha, sporangium, zoospore, zoosporangial discharge, gemmae, antheridium, antheridial branch, oogonium, and oospore. They have the monoecious thallus, cottony mycelium, coenocytic hyphae, terminal, and intercalary sporangium with cylindrical, clavate, or fusiform in shape. Zoosporangial discharge achlyoid with spore balls and have monomorphic zoospores. Single or catenulate gemmae with obpyriform, cylindrical, fusiform, or oval in shape. The antheridial branch is diclinous with simple and tubular antheridium cells. Oogonium is abundant, single or catenulate, lateral or terminal, with obovate, obpyriform, and spherical in shape. In the outer cell wall of oogonium, there is no ornamentation, and the inner cell wall is smooth. There are 1-10 oospores in each oogonium and have sub centric mature oospores. Based on the character, the isolates describe to genus *Achlya* and are similar to the character of *Achlya oblongata*. Molecular characterization is needed to appropriate identification.

Keywords: *morphology,* Achlya*, Saprolegniasis, fish*

ABSTRACT ID: BI-44

Detecting forest bird sound in Mt. Merapi National Park, Java, Indonesia using passive bioacoustic recording unit

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Abstract

Dynamic in bird community and its population sizes are an important indicator in biodiversity conservation. Unfortunately measuring those parameters are not easy, and labor-intensive works. Progress in audio signal recording, processing and pattern recognition makes it possible to apply automated methods into the detection of bird vocalizations. Furthermore, these methods can be employed to support the monitoring of birds in particular habitat. We report our preliminary assessment of bird diversity using passive acoustic recording unit. We deployed two Audio moth units for three months in the mountain forest of Mt. Merapi National Park, Java Indonesia. The units were set up for continuous recording, 24 hours per day; sampling rates 16 kHz. The sound records were manually identified using Raven Pro 1.6. Twenty bird species have been identified based on its sound, including the endangered and endemic Javan-hawk eagle (*Nizaetus batelsi*). In addition, one new record of bird in the area, Banded broadbill *(Eurylaimus javanicus*), was also identified based on its recorded sound as well as visually observed. This finding suggested the potential application of passive acoustic recording unit to monitor the dynamic of bird community and population for the conservation of species concerned.

Keywords: *bird, sound, bioacoustic, passive recording unit*

ABSTRACT ID: BI-45

Diagnosis of virus causes diseases in ornamental shrimp at FQIA Denpasar with Multiplex PCR method

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Abstract

Ornamental shrimp is one of Indonesia's leading exports commodityes in the fisheries sector. Ornamental shrimp that will be exported must meet the requirements to be viral diseases-free because they will become a source of virus transmission and cause losses. The conventional PCR method can only amplify one target virus at a single time, so it is time consuming and costly. This study aimed to determine the sensitivity and specificity of the multiplex PCR method and to determine the number of ornamental shrimps infected with white spot syndrome virus (WSSV), infectious hypodermal and hematopoietic necrosis virus (IHHNV), and monodon-type baculovirus (MBV) either by single infection or coinfection. The research conducted at Fish Quarantine and Inspection Agency Regional Office Denpasar (FQIA Denpasar) and the method used in this research began with sensitivity and specificity tests of three sets of primer followed by examination on ornamental shrimp including DNA extraction, amplification with multiplex PCR, electrophoresis and visualization with a UV transilluminator. The multiplex PCR method is quite sensitive with an improved result detection limit value of 1.8 pg/µL for the detection of WSSV, IHHNV, and MBV. Three sets of primers used specifically only amplify the target genes VP664, ORF1, and PmNV055 of WSSV, IHHNV, and MBV respectively. From the 31 samples of ornamental shrimp, there were seven (23%) samples with single infection and four (13%) samples with coinfection.

Keywords: *IHHNV, MBV, multiplex PCR, ornamental shrimp, WSSV*

ABSTRACT ID: BI-46

Antioxidant and anti-inflammatory effects of Salak fruit peel extract on an aging cells model

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Abstract

Salak fruit peel extract (SPE) is presumed to have the ability to inhibit aging. In this decade, its anti-aging mechanism is being studied. In this decade, its anti-aging mechanism is being studied. Abundant phenolic compounds are discovered in SPE, such as chlorogenic acid, rutin, and caffeic acid, which are known as active compounds against aging. The present research analyzed SPE anti-oxidant and anti-inflammation activities to study its anti-aging potency. SPE was applied to the UV-exposed fibroblast cells. The cells were harvested and the protein in the conditioned medium was isolated. Subsequently, it is analysed using a colorimetric assay for nitric oxide (NO) and the ELISA method to measure the levels of cyclooxygenase II (COX-2) and interleukin-6 (IL-6). UV induction remarkably increased the levels of NO, COX-2, and IL-6. These proteins' production was reduced with SPE treatment, with noticeable results. In particular, SPE influenced the lowest levels of NO and COX-2 at 12.5 g/mL and the lowest production of IL-6 at 12.5 g/mL. In conclusion, SPE possess anti-oxidant and anti-inflammation activities by lowering NO, COX-2, and IL-6 levels. These activities indicates SPE potency against aging, but more complex and complete examination are suggested for further research.

Keywords: *anti-aging, inflammation, fibroblast cell, Salacca zalacca*

ABSTRACT ID: BI-47

Green tea extract effect on ASC and CCL-2 gene expressions as the potential against ARDS

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Abstract

Acute Respiratory Distress Syndrome (ARDS) is signified by cytokines infiltration in lungs, and acknowledged as major cause of COVID-19 fatalities. Therefore, the focused treatment is to reduce lung inflammation. The flavonoid content of green tea extract (GTE) promises ability against inflammation and oxidation, and is expected to be an alternative in the treatment of COVID-19. This study aimed to examine the expressions of Apoptosis-associated Speck-like protein containing a Caspase recruitment domain (ASC) and the C-C motif Chemokine Ligand 2 (CCL-2) in ARDS-suffering rats. The study was conducted by quantifying ASC and CCL-2 gene expressions in the lungs of 25 rats that had been induced with LPS using RT-PCR. The results show that treatment with GTE reduced the expressions of the ASC and CCL-2 genes. Interestingly, the decrease was dose-dependent; the higher the dose of GTE, the fewer genes were detected. This finding suggests further research to examine more markers in ARDS pathologies. In conclusion, GTE downregulated the expressions of ASC and CCL-2, thereby possessing potential for attenuating lung inflammation in ARDS-suffering rats.

Keywords: *acute respiratory distress syndrome, anti-inflammation, ASC, CCL-2, green tea,*

ABSTRACT ID: BI-48

Amplification of gene encoding antifungal compounds from *Bacillus subtilis* subsp. *subtilis* STTG 14 and analysis of its antifungal properties

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Abstract

Bacillus subtilis subsp. *subtilis* STGG 14, the phyllosphere bacteria which are obtained from the surface of rice leaf is proved to have antifungal activity toward *Pyricularia oryzae*. The antifungal genes owned by *B. subtilis* subsp. *subtilis* STGG 14 are assumed to play important role in interfering the growth of *P. oryzae.* This research aimed to discover the antifungal gene from *B. subtilis* subsp. *subtilis* STGG 14 and analyse the properties of its antifungal compounds. Antifungal genes from *B. subtilis* subsp. *subtilis* STGG 14 were amplified using PCR method with several primers known to encode differ antifungal compounds. We successfully amplified *ytpA* gene which encodes lysophospholipase like enzyme that have a role in the synthesis of bacilysocin. Furthermore, the bacilysocin crude extract was obtained from bacterial culture in NG medium using butanol and methanol as solvent. The crude extract was then analysed using GC/MS (Gas Chromatography/Mass Spectrometry) and FTIR (Fourier-Transform Infrared Spectroscopy) to reveal its antifungal properties. Interestingly, methyl tetradecanoate, the fatty acid structure of bacilysocin have been detected using GC/MS. This finding is supported by FTIR analysis which revealed the existence of several functional group such as C=O, C-H3, P=O and P-O-C. In addition, 15 chemical properties from crude extract are also detected by GC/MS and 5 of them displayed antifungal activities according to several references. *Bacillus subtilis* subsp. *subtilis* STGG 14 capable to produce bacilysocin which proved by the existence of *ytpA* gene and other antifungal compounds according to GC/MS analysis results. The existence of *ytpA* gene in *B. subtilis* subsp. *subtilis* was firstly reported from rice phyllosphere bacteria in Indonesia which can be developed as biocontrol agents to manage blast disease in the future.

Keywords: *antifungal genes, antifungal compounds, fungal pathogen, phyllosphere bacteria*

ABSTRACT ID: BI-49

First report of *Colletotrichum magnum* causing anthracnose in *Carica papaya* fruits in Bali, Indonesia

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Abstract

Anthracnose is a group of fungal diseases that affect a variety of crop plants in warm and humid areas. Anthracnose causes the wilting, withering, and dying of tissues. It commonly infects the developing shoots, leaves, and fruits. Anthracnose disease critically affects the quality and production of *Carica papaya* fruits in Bali, Indonesia. This fungal disease is typically caused by a pathogenic- fungi belongs to the genus of *Colletotrichum*. Morphology and molecular identification of pathogenic fungi is very important to determine the type of pathogenic fungus that causes anthracnose disease in the papaya fruit. The present study aims to identify the pathogen that caused anthracnose on papaya fruits in Bali, Indonesia, carried out during July – December 2021 at the Belok Village, District of Petang, Badung Regency. This study used Koch's postulates to confirm the pathogenicity and continued with macro- and micro-morphological characterization. Based on macro- and micro-morphological characterization, the pathogen showed similar traits to the genus of *Colletotrichum*. To increase the robustness of data, molecular identification was conducted using the ITS sequences. Based on the molecular analysis, the DNA sequences of the genus *Colletotrichum* isolated from papaya fruits showed the symptoms of anthracnose disease. Based on the present findings, the pathogen causing anthracnose disease in *Carica papaya* fruits in Bali was identified as the species *Colletotrichum magnum*.

Keywords: Carica papaya, Colletotrichum magnum*, anthracnose, molecular identification*

ABSTRACT ID: BI-50

Expression of the *Roc5* gene in drought-stressed rice

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Abstract

Drought stress triggers the expression of many genes in rice, including *the Roc5* gene that plays a vital role in regulating leaf rolling, one of rice's drought stress responses. There is a difference in leaf rolling level between a drought-tolerant rice var. Hawara Bunar and its drought-sensitive mutant under drought stress, which is suspected due to the different expression in the *Roc5* gene. Therefore, the objective of the research was to analyze the expression of the *Roc5* gene in rice var. Hawara Bunar and its drought-sensitive mutant under drought stress conditions. Rice plants were stressed with drought, and the *Roc5* gene expression was analyzed using RT-PCR. The results showed that drought stress induced the expression of the *Roc5* gene 7.46 times higher in rice var. Hawara Bunar mutant than in its wild type. The differences in the *Roc5* gene expression between rice var. Hawara Bunar and its mutants caused differences in the curling level of the leaves under drought stress. Since the gene is a major gene controlling the leaf rolling, the gene could be a target for gene editing for developing drought-stress tolerant rice lines.

Keywords*: drought tolerance, gene expression, leaf rolling, rice mutant, RT-PCR*

ABSTRACT ID: BI-51

School Surveillance - a multi- disciplinary scheme for safe school conduct during pandemic Covid-19

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Abstract

The Covid-19 pandemic has greatly disrupted school conducts and unavoidably reduced the quality of students learning experience, especially those of practical- and hands-on activities. Lack of social interactions between students and teachers, and among fellow students- worsen the situation. To address the problem, we designed and implemented a multi-disciplinary surveillance-scheme to maintain a healthy and safe school conducts during the pandemic. Molecular biology tools were implemented in educational setting and public health approaches. The surveillance-scheme consists of three programs that were implemented simultaneously, i.e. educating, testing, and assisting. Molecular biology tools, particularly the Pooled- Quantitative Polymerase Chain Reaction (pooled- qPCR) has been the central method we have been used for a communal-, instead of an individual-. Covid-19 testing. The large-group PCR testing enables a quick- and accurate- assessment of Covid-19 transmission at school. The assessment helps school authorities making decision regarding how teaching- and learning- activities should be conducted. The communal- PCR data contributes to the Positivity Rate (PR) data- of the city where it was first implemented, Kupang, at the NTT Province. The PR dynamics were taken into consideration for the school's conduct. To the best of our knowledge, this is the first report on a multi-disciplinary based-surveillance-scheme that was implemented in a school platform. It offers a strategic-scheme that can be also implemented in other public settings, especially facing possibilities of other future pandemics. The scheme was then adopted in 2021 by the Ministry of Health of Indonesia Republic to be implemented at the national level.

Keywords**:** *Covid-19*, *healthy school, mass-testing, pandemic, pooled-test, qPCR, school surveillance*

ABSTRACT ID: BI-52

Genetic variation of Enggano Hill Myna (*Gracula religiosa enganensis* Salvadori 1982) based on *Cytochrome* B gene mitochondrial DNA

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Abstract

The enggano hill myna (*Gracula religiosa enganensis*) is an endemic bird of the Sturnidae family whose genetic information is still limited. The purpose of this study was to analyze the genetic diversity of the *Cytochrome* b gene in the mitochondrial DNA of the Enggano Hill Myna. The blood of 5 individual Enggano Hill Myna was taken and the total genomic DNA was isolated. The *Cytochrome* b gene was then amplified using PCR (*Polymerase Chain Reaction*) then analyzed using MEGA 4.0 software. The PCR product with the length of 799 bp, showed 764 conserved sites, 35 variable sites, parsimony information (Pi) 2 sites, Singleton (S) 33 sites. The highest composition of nucleotide bases is Cytosine (C) and the lowest is Guanine (G), while the highest composition of nucleotide base pairs is Adenine and Thymine (AT) 50.48% and the lowest is Guanine and Cytosine (GC) 49.52%. The five individual Fnggano Hill Myna have genetic distance with an average intrapopulation of 0.1%, interpopulation 4%, and intrafamily 15.5%.

Keywords: *Cytochrome b,* Gracula religiosa enganensis*, genetic variation*

ABSTRACT ID: BI-53

Bee pollen and rosella flower extract as drug-candidate for fertility

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Abstract

The phytochemical content of bee pollen and rosella flowers can be used as medicinal ingredients. Bee pollen contains various vitamins, essential amino acids and rosella flowers contain vitamin C, anthocyanins and riboflavin. Several studies have found that bee pollen can relieve prostatitis sufferers, as an antimicrobial, immunomodulator and increase fertility in women and men. Rosella flower is used as an alternative medicine for leukemia, liver damage, and increasing sperm production. This study was conducted to determine the phytochemical content and the possibility of the combination of bee pollen and rosella flower extract as a drug candidate to increase fertility. Tests on the phytochemical content and standardization of bee pollen and rosella flowers were carried out with spectrophotometry. The result of phytochemical screening found that bee pollen and rosella contain polyphenols, alkaloids, flavonoids, tannins, while carotenoids only been found in bee pollen and saponins and triterpenoids in Rosella. These are the ingredients that typically have medicinal properties. The results of making granules from the combination of the two materials found that the drying shrinkage test met the requirements (2-5%), the granule flow type test was very good by meeting the angle of repose (25-30°), the compressibility index met the requirements (less than 20%), the average size of the granule particles was very good (519.0996 μm). From all the results of tests carried out on bee pollen and roselle flowers, it was found that these ingredients are drug candidates where further testing is needed to see the effectiveness of these ingredients on reproductive health.

Keywords: *bee pollen, drug candidate, granule, rosella flowers, phytochemical content*

ABSTRACT ID: BI-54

Developments of several specific SARS-CoV-2 primer sets to distinguish Delta and Omicron variants using S-Gene Target Failure (SGTF) approaches

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Abstract

The Covid 19 outbreak is a respiratory infection caused by the SARS-CoV-2 virus. SARS-CoV-2 variants that predated Alfa, Beta, Gamma, Lambda, Kappa, Lota, Eta, Delta, and Omicron. The presence of rapid virus gene mutations complicates the screening process, necessitating a rapid and accurate detection approach in order to increase genomic surveillance. The goal of this study is to use a bioinformatics approach to design a specific primer from an Indonesian genome that focuses on specific SGTF (S-Gene Target Failure) markers and validate the selected primers by the RT-qPCR method. The *in-silico* analysis revealed four pairs of primer options with PCR products of 161 bp for omicron A+C, 125 bp for omicron B+C, 83 bp for omicron D+E, and 200 bp for delta primers. Additionally, the in silico melting temperature (Tm) curve prediction results demonstrated significant outcomes; the mutant curve had a Tm of 85.25 °C while the wild type curve had a Tm of 84.75 °C. Based on the data, it is possible to conclude that the specific primer set was developed successfully and that the primer was coupled to the correct target gene sequence.

Keywords: *genomic surveillance*, SARS-CoV-2, *set of specific primer*, *s-gene target failure*

ABSTRACT ID: BI-55

Optimizing the plasmid injection of *rpob* and *Katg* genes for diagnostic testing of Multidrug Resistance Tuberculosis (MDR-TB)

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Abstract

Tuberculosis is a bacterial infection that has not been handled properly. It is estimated that there are 824 thousand cases of tuberculosis (TB) in Indonesia, and it is expected that around 90% of the total number of patients in Indonesia can be detected in 2024. Some TB patients do not comply with medication, resulting in multidrug resistance (MDR-TB) to drugs. As a result, the patient is not detected by the current diagnostic test. An in-silico simulation of plasmid construction with the insertion of the rpoB and katG genes has been used as initial modeling for the multidrug resistance (MDR)-TB diagnostic test. This study aims to determine the precision of the rpoB and katG genes insertion on plasmids resulting from the in-silico technique so that they can be used in producing raw materials for developing serological diagnostic tests. Optimization tests were performed using the Sensi-FAST HRM Kit RT-PCR test, 2000 rxn Bioline (BIO-32020), 2X SYBR Green PCR Mastermix, rpoB Primer, katG, and IS6110-R. The optimization results indicate the successful insertion of the genes into the plasmid. The results of the electrophoresis test showed the presence of a DNA band with a length of 467 and 461 bp.

Keywords; *katG gene, plasmid, rpoB gene, RT-PCR, MDR-TB*

ABSTRACT ID: BI-56

Revealing the diversity of the Cyprinidae family in the area of Merangin Geopark, Jambi, based on the DNA barcodes

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Abstract

The Geopark Merangin Jambi is currently in the process of being assessed as a member of the UNESCO Global Geopark Network (GNN). The concept of geopark management, combining between; geodiversity, culture diversity and biodiversity. The main site of the Geopark Merangin is located along the Batang Merangin River, so it has a high potential for fish diversity. The results showed that there are 28 species of fish in the Merangin Geopark, 25 genera and 11 families, Cyprinidae being the largest one (68%). DNA barcode analysis using Fish F1 and Fish R1 primers were carried out towards 27 individuals, 15 species, 9 genera of fish from the Cyprinidae family. The DNA sequences were aligned, and the phylogenetic relationship was analyzed using MEGA7. The aligned 576 bp- sequences contain 353 bp conserved nucleotides and 223 bp variable nucleotide. The composition of nucleotides was T(U) =29.2%, C=26.6%, A=27.5%, and G=16.7%. Based on the phylogeny tree, it was revealed that the Cyprinidae family consists of two main clades, namely Rasbora and non-Rasbora. The non-Rasbora clade is divided into Barbodes and non-Barbodes.

Keywords: *Geopark Merangin, Cyprinidae, DNA barcode, phylogenetic*

ABSTRACT ID: BI-57

Bird diversity at Udayana University Jimbaran Campus, Badung - Bali

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Abstract

Bird is one important component of balancing ecosystems and have a reciprocal relationship and a close dependence on the environment. The high number of bird species inhabit an area may indicate the ecological role of the environment, either for foraging, sheltering, or breeding. The Udayana University Bukit Jimbaran campus, covering an area of 1,576,827 m^2, still has a plenty of green areas that potentially can act as a habitat for various bird species. This study aimed to identify the bird species diversity that inhabit the Udayana University Bukit Jimbaran campus area. This study was conducted from March to May 2020. The method used was the point count method on 11 different pathways. The number of bird species and the number of individuals seen were calculated, and later the calculation to obtain the index diversity, uniformity, dominance, and relative abundance were conducted. This study found 30 bird species from 18 families with a total of 571 individuals. The bird diversity at the Udayana University Bukit Jimbaran campus area was classified as moderate, with high species uniformity and low dominance (no species dominated).

Keywords: *birds, campus, diversity, index, point count, species*

ABSTRACT ID: BI-58

Rhizobacteria combined *Piper caninum* extract to increase the production of Bali red rice

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Abstract

Pesticides and chemical fertilizers has a very bad impact on the environment, the resulting agricultural products contain toxic residues, very harmful to health. The study aimed to suppress blast disease caused by *Nigrospora oryzae* and improve Bali red rice yields by utilizing rhizobacteria, an environmentally friendly *Piper caninum* extract to get a safe and healthy diet. The study used the extraction method, SEM. This research was conducted in-vitro and in-vivo. The treatment in the greenhouse is 4, namely control (F0), Piper caninum extract 2% (F1), *Brevibaculluss agri* 2% (F2), *P. caninum* extract fermentation 2% with *B. agri* 2% (F3). The results showed that the fermentation treatment of *P. caninum* extract 2% with *Brevibaculluss agri* 2% (F3) showed the highest resistance to *N. oryzae* (76.8%), and produced the highest dry grain production (7.22 tons/ha), increasing dry grain yield by 49.95% compared to control.

Keywords: *sustainable agriculture, rice, biocontrol*

ABSTRACT ID: BI-59

Nutrition and determination of bioactive compounds of *Talinum paniculatum* (Jacq) Gaertn (Som Java)

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Abstract

Som Java has been used as traditional medicine by some tribes in South East Asia as anti-inflammatories resourses. However, report on nutrients and bioactive compound of Som Java still unclear. This study aims to determine nutrients, and bioactive compound of Som Java roots. Nutrient profiles were done using the proximate analysis and Atomic Absorption Spectrometric (ASS). Screening of bioactive compounds was conducted by GCMS. *In-silico* analysis was used to determine the probable antioxidant activities of the bioactive compounds. This study shown that crude lipid < water < crude protein < fiber < ash < materials extracts without nitrogen < organic material and content of Fe > K> Na> Ca> Mg. The percentage of bioactive composition are eugenol> isof ucasterol> β-sitosterol> β-eudesmol. Ginsenoside Rb3, Rb2, Rb1, Rc, Rg1 are quite abundant types of saponins with the greatest antioxidant activity (pa> 0.7).

Keywords: *proximate, ginsenoside, minerals, eugenol, β-sitosterol, Talinum paniculatum*

ABSTRACT ID: BI-60

The use of mangrove forest by the Bali myna *Leucopsar rothschildi* at Bali Barat National Park

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Abstract

Bali myna *Leucopsar rothschildi* is an endemic avifauna of the island of Bali and has been designated as the fauna mascot of the province of Bali. Unfortunately, this bird has an endangered ecological status due to its population was shrinking in nature. Rehabilitation efforts have been carried out through habitat management and release in the Bali Barat National Park (BBNP) as their natural habitats, so that currently almost 450 individuals were recorded living freely in several ecosystem types in BBNP, including in the mangrove forest. One indicator of the success of the rehabilitation process can be seen from the condition of the released population in the nature. This study aims to determine the use of mangrove forest by the Bali myna at BBNP. We used the point count methods with a radius of 50 m. All birds seen and their activities were recorded. This study found that the Bali myna used the mangrove forest as foraging, roosting, and breeding ground. We also recorded interspecific interactions between the birds with other taxas, and the birds were observed using more than one vertical habitat stratum. Shall the results of this study be used as references in the post-release management program of Bali myna at the BBNP.

Keywords: *Bali myna, birds, endemic, mangrove, national park*

ABSTRACT ID: BI-61

Morphological studies of tadpoles in Jeruk Manis Protected Forest, Gunung Rinjani National Park

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Abstract

Lombok is home to five families of anurans, comprising to ten genera and 12 species. Six of them have been recorded in Jeruk Manis Protected Forest, Gunung Rinjani National Park. Compared to adult anurans, the study of biology and ecology of tadpoles are poor. This study described five genera of tadpoles (*Duttaphrynus*, *Fejevarya*, *Limnonectes*, *Papuarana* and *Polypedates*) who have been recorded in Jeruk Manis Protected Forest.

Keywords: *tadpoles, morphological study, Gunung Rinjani National Park*

Oral Presentation Abstracts
CHEMISTRY

Environmental Chemistry, Material Chemistry, Food Chemistry, Natural Product Chemistry, etc.

ABSTRACT ID: CHEM-01

The determination of total free amino acids and soluble protein contents in red bean sprout (*Phaseolus vulgaris* L.) extract in various germination times

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Abstract

Germination process stimulates the degradation process of reserved protein in legumes producing short chain protein and free amino acids that are beneficial in the fields of food and health. Red beans (*Phaseolus vulgaris* L.) which is available sustainably in the market is a type of bean containing high protein content. Therefore, the sprouted red beans have the potential to be used as a source of free amino acids and soluble protein. This study aimed to determine the effect of germination time on free amino acid and soluble protein contents in red bean sprout extract. To achieve the goal, a series of research stages were carried out, starting with the red bean germination process carried out in various germination times. Furthermore, each sample of the sprouts entered the stages of flouring, extraction, and deproteination, hence red bean sprout extracts were obtained. It was found that the water content in the red bean flour was of 9.28%. This water content value has met the quality standards of Indonesian National Standard (SNI) which is 10% as the maximum water content in flour derived from beans. The qualitative tests for the presence of amino acids carried out using the ninhydrin method and the protein tests carried out with the application of biuret method to the extracts of red bean sprouts in various germination time, i.e 0, 24, 48, 72, 96 and 120 hours showed positive results, namely in the ninhydrin test the formation of the purple color became more concentrated with increasing germination time, whereas in the biuret test, the longer the germination time the purple color formed was getting thinner which indicated the protein content was decreasing. In the next work, the

determination of the total free amino acid and the soluble protein contents will be carried out by spectrophotometry at wavelengths of 570 nm and 540 nm.

Keywords: *amino acids, red beans, protein, qualitative test*

ABSTRACT ID: CHEM-02

Active compounds and antifungal activity of the bark extract of *Michelia champaca* to *Curvularia verruculosa* fungal the causes of leaf spot desease in rice plants

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Abstract

The bark extract of *Michelia champaca* can inhibit the growth of *Curvularia verruculosa fungal* which causes leaf spot disease in rice plants. Extraction was done by maceration methods, antifungal activity measured by diffusion well method. Identification of active compounds was carried out by ultraviolet-visible spectroscopy (UV-Vis.), infra-red spectroscopy (IR), and gas chromatography-mass spectroscopy (GC-MS) spectroscopy. Extraction yield with methanol was 18.7%. It is showed very strong activity against *C. verruculosa* (30.01 mm). The fractionation results showed that n-hexane fraction was the strongest inhibiting the growth of *C. verruculosa* (32.45 mm), followed by chloroform fraction (29.20 mm), while n-butanol fraction was not active. Separation of active compound from n-hexane fraction used Column chromatography (CC) method with silica gel as stationary phase and the mixture of n-hexane-acetone (3:1) as mobile phase was be obtained 5 combined fractions, which 3 fractions showed very strong inhibition, namely the HB (15.21 mm), HC (26.73), and HE (33.46) fractions, while 2 fractions, namely HA and HD did not show activity. The purity test by TLC showed that only the HC fraction was chromatographically pure, so it was be identified by UV-Vis, IR, and GC-MS. HC fraction showed wave length maximum at 242 nm which was thought to contain aromatic C=O and C=C chromophore. The IR spectra of the HC fraction showed that this compound contained functional groups –OH, C=O, and C=C benzene. Identification using GC-MS revealed that the HC fraction contains two compounds, namely tributyl acetylcitrate and terephthalic acid, dodecyl-2-ethylhexyl ester, both of which have antifungal activity.

Keywords: Michelia champaca, Curvularia verruculosa*, antifungal, and active compounds.*

ABSTRACT ID: CHEM-03

Synergism of total flavonoid levels in increasing antioxidant activity herbal formulation of *Gyrinops versteegii* leaves with *Cinnamon* and *Caesalpinia*

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Abstract

Flavonoids are one of the secondary metabolites that have very high levels in medicinal plants and have strong activity. The purpose of this study was to determine the synergism of increasing flavonoid levels with increased antioxidant activity of *Gyrinops versteegii* herbs with *Cinnamon* and *Caesalpinia*. Determination of total flavonoid levels using the standard Quercetin with while antioxidant activity using the DPPH. method. The strength of antioxidant activity can be seen from the IC_{50} value of each formulation sample. Measurement of total flavonoid content and antioxidant activity using UV-Vis spectrophotometer. The formulation in this study used 11 kinds of *Gyrinops versteegii* powder formulations added with *Cinnamon* and *Caesalpinia* powder. The eleven formulations measured showed increased levels of flavonoids and antioxidant activity. The formulation of 5 parts of *Gyrinops versteegii* leaves powder plus 4 parts of *Cinnamon* powder and 1 part of *Caesalpinia* powder showed the highest flavonoid levels = 915 mg QE/100 gram sample and very strong antioxidant activity with IC_{50} value = 46 ppm. These results indicate that in the 5:4:1 formulation, it can be said that increasing levels of flavonoids can increase antioxidant activity or there is a synergism between increased levels of flavonoids and antioxidant activity of *Gyrinops versteegii* leaf formulations.

Keywords: *Antioksidan, DPPH,* Gyrinops versteegii*,* Cinnamon *and* Caesalpinia

ABSTRACT ID: CHEM-04

Antioxidant and antibacterial activities of *Trigona* sp. nanopropolis

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Abstract

Propolis is one of the important by-products of bees which is used as a component of defense, external immune system and antimicrobial. The *Trigona* sp. bee is a type of bee native to Asia which has the characteristics that the honey produced has a sour taste but is resistant to fermentation and is rarely moved, and the haractivity of its honey products is higher than that of the *Apis* genus honey. In this study, modifications were made to the particle size of the propolis from *Trigona* sp. honey spiders into nano-sized particles using the ionic gelation method. The resulting nanopropolis was tested for its antioxidant activity using the DPPH shift method and its antibacterial activity was tested against staphylococcus Aureus bacteria. Through phytochemical tests, it was found that propolis was positive for tannins, flavonoids and alkaloids but negative for saponins. Antioxidant activity test showed that nanopropolis had strong antioxidant activity (55.81mg/L) while propolis in bulk form had moderate antioxidant activity (209.2 mg/L). Inhibition against Staphylococcus Aureus bacteria from propolis extract, NP1:5, NP1;10, and NP 1:15 respectively 0 mm, 18 mm, 12 mm, and 8 mm.

Keywords: *antibacterial, antioxidant, nanopropolis, phytochemical,* Trigona sp.

ABSTRACT ID: CHEM-05

Formulation of solid herbal soap extract of girang leaf (*Leea angulata* Korth. Ex Miq) with antioxidant and antibacterial potential

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Abstract

Herbal soaps are potential acts to manage skin problems. Girang leaf is one of the plant that has the potential effect for antioxidant and antibacterial, so it is good to add to herbal soaps. This study aims to determine the formulation of herbal soap from girang leaf extract in accordance with SNI standards, as well as to determine its antioxidant and antibacterial potential. This study consisted of 5 formulas, namely formulas I, II, III, IV, and V with the addition of girang leaf extract of 0; 0.5; 1; 1.5; and 2 g. Solid soap is made by hot process saponification method. The antioxidant activity test was carried out by the DPPH method and the antibacterial activity test against S. aureus was carried out by the agar diffusion method. The soap quality test determined by water content, amount of saponified fatty acid, free fatty acid/free alkali, unsaponifiable fat, and chloride content. The results of the antioxidant activity test for soap products of formula I, II, III, IV, and V with IC50 values respectively 773.66; 362.66; 284.84; 163.26; and 75.24 mg/L. The test results of antibacterial activity of soap formulas I, II, III, IV, and V against S. aureus bacteria showed the same activity, specifically 8 mm at a concentration of 20% and 9 mm at a concentration of 40%. The results of the quality test of girang leaf soap, all were in accordance with SNI standards except for the amount of unsaponifiable fatty acids.

Keywords: *herbal soap, girang leaf, antioxidant, antibacterial.*

ABSTRACT ID: CHEM-06

Administration effect of methanol extract from *Protium javanicum* Burm.f (tenggulun) leaf on lipid peroxidation in rats exposed to cigarette smoke

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Abstract

This research was conducted to investigate the administration effect of methanol extract from *Protium javanicum* Burm.f (tenggulun) leaf on inhibiting lipid peroxidation in Wistar rats exposed to cigarette smoke. The parameter observed includes malondialdehyde (MDA) level and superoxide dismutase (SOD) activity as lipid peroxidation biomarkers. This experiment used a randomized post-test-only control group design. Thirty Wistar rats were divided randomly into six groups: normal control (N, only given standard food); negative control (K-, cigarette smoke exposure only); positive control (K+, given vitamin C 50 mg/kg BW and cigarette smoke); treatment groups (P1; P2; P3) exposed to cigarette smoke and given extract with a dose of 50, 100, and 200 mg/kg BW respectively. The exposure of cigarette smoke was performed using 3 cigarettes per day for 14 days. On the 15th day, each of the rats' blood was taken and the MDA level and SOD activity were analyzed. The data obtained were then statistically analyzed. The result exhibited that the MDA level of the negative control (K-) was the highest (6.54±0.46μM) while its SOD activity was the lowest (1.041±0.113 ng/mL) compared to the other groups (K+; P1; P2, and P3) indicating that lipid peroxidation had occurred. Administration of methanol extract from tenggulun leaf significantly ($p<0.05$) reduced the MDA level (K+ 2.57±0.07 μM; P1 5.24±0.268 μM; P2 4.35±0.128 μM; and P3 2.99± 0.288 μM), and increased the SOD activity in each treatment group (K+ 2.514±0.139 ng/mL; P1 1.277±0.053 ng/mL; P2 1.592±0.106 ng/mL, and P3 2.054±0.59 ng/mL) compared to the negative control.

Keywords**:** *cigarette smoke, lipid peroxidation, malondialdehyde,* Protium javanicum *Burm.f, superoxide dismutase*

ABSTRACT ID: CHEM-07

Staphyloccocus aureus antibacterial compounds in the stem bark of *Inocarpus fagiferus* Fosb.

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Abstract

Inocarpus fagiferus Fosb (Fabaceae) is a plant that has the potential as an antibacterial because has been traditionally used for dysentery and urinary tract infections. This study aims to determine the possibility of *Inocarpus fagiferus Fosb* stem bark extract in inhibiting the growth of *Staphylococcus aureus* (*S. aureus*) and containing the active antibacterial compounds. The extraction of the stem bark was carried out by maceration and partitioning methods, then the antibacterial activity test was carried out by the agar diffusion well method. The separation was carried out by column chromatography, and the identification of the active compound by LCMS/MS. Maceration of 350 g stem bark produces 22.97 g of methanol extract. Partition of methanol extract with n-hexane, chloroform, butanol, and water solvents respectively, produce 0.01; 0.01; 2.75, and 0.07 g concentrated extracts. The antibacterial activity of methanol extract inhibited *S. aureus* in the strong category (14.75mm) with the MIC value of butanol extract being 0.5%. Separation of the butanol extract of *Inocarpus fagiferus Fosb* stem bark using the gradient column chromatography method resulted in 4 fractions of which C fraction was active as antibacterial with an inhibitory value of 7.25mm for *S. aureus*. Mass spectra analysis of the chromatogram peaks from the LCMS / MS results showed that fraction C was thought to contain the antibacterial compounds *Maltol, Nitocinamide, Biochanin A, L-proline*, *2,3 diaminopropionic acid*, and unidentified compound with a mass of 95.8066 g/mol.

Keywords: *Antibacterial,* Inocarpus fagiferus *Fosb Steam Bark,* Staphylococcus aureus *LCMS/MS*

ABSTRACT ID: CHEM-08

Flavonoid from chloroform extract of *Samanea saman* Jacq. leaves as an inhibitor of the growth of *Fusarium solani*, the cause of dragon fruit stem rot disease

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Abstract

Rain tree (*Samanea saman* Jacq.) leaf chloroform extract can be used as an inhibitor for the growth of *Fusarium solani*, pathogenic fungi that cause stem rot disease on dragon fruit. The aim of this study was to isolate compounds in the antifungal active fraction of the chloroform extract of rain tree leaves. Extraction was carried out by maceration method followed by partition into n-hexane, chloroform, ethyl acetate, and acetone. Separation compounds in active extract was conducted by chromatography methods, while phytochemical screening and spectroscopy method was applied to identify compounds. Antifungal assay was carried out by well diffusion agar. Extraction of 5 g of rain tree leaf powder produced 404.3 g of concentrated ethanol extract. The partition process produced concentrated extracts of n-hexane, chloroform, ethyl acetate, acetone, and water. Antifungal assay results showed that all extracts could inhibit the growth of fungi. Rain tree leaf chloroform extract was the strongest inhibiting the growth of *Fusarium solani* with a diameter of 22.5 mm. Separation of compound in the chloroform extract resulted that most active isolate can inhibit the growth of the fungi with an inhibition zone of 13 mm. Identification compound in the active isolate shows that the compound responsible for the activity of the rain tree leaf chloroform extract is flavonoids, especially flavonols.

Keywords: *Dragon fruit,* Fusarium solani*, Pathogenic Fungi, Rain Tree,* Samanea saman *Jacq.*

ABSTRACT ID: CHEM-09

Two derivatives of 7-Aminocephalosporanic Acid (7-ACA) compounds and their antibacterial activities

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Abstract

Modifications of the cephem basic skeleton of 7-ACA usually possess greater stability towards lactamases and improved pharmacological properties. There are two positions available for chemical manipulation in cephalosporin nucleus i.e. C3 and C7. A wide variety of amine acylation methods has been used for the production of C7- acylamino derivatives by the use of acyl chlorides, mixed anhydrides, active esters, and carbodiimides to improve the pharmacodynamic property. In this research, modification of C7-acylamino derivatives by the use of benzoyl chloride and cinnamoyl chloride according to the method of Keltjens group under Schotten-Baumann conditions. Different solvent has been used in two N-acylation with benzoyl chloride and cinnamoyl chloride. N-acylation with benzoyl chloride has been used saturated aqueous $NaHCO_3$ and acetone (3:1) and gave 7β-(benzoyl substituted)amino-3-acetoxymethyl-3-cephem-4-carboxyclic acid (**1**). However in N-acylation with cinnamoyl chloride has been used saturated aqueous $NaHCO_3$ and acetonitrile (1:4) and gave 7β-(cinnamoyl substituted)amino-3-acetoxymethyl-3-cephem-4-carboxyclic acid (**2**). Products reaction were purified by suspended, stirred, and washed with diethyl ether, and for further purification has performed by chromatography method. The structures of both product reactions have been confirmed by NMR spectral analysis. Antibacterial activity test was performed in vitro against each of the Gram-positive and Gram-negative bacteria by paper disc diffusion method. Compound (**1**) and (**2**) showed antibacterial activity against *Bacillus subtilis* and *Salmonella typhi*

Keywords: *Synthesis, 7-Aminocephalosporanic acid (7-ACA), N-acylation, C7-acylamino derivatives, benzoyl chloride, cinnamoyl chloride, antibacterial activity,* Bacillus subtilis, Salmonella typhi

ABSTRACT ID: CHEM-10

Transformation of purines and resveratrol

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Abstract

Purines are the most widely occurring nitrogen-containing heterocycles in nature. Caffeine and theophylline are purine derivatives that have many important activities. Caffeine use widely as a central nervous system (CNS) stimulant and play an important role in stimulants of the cerebral cortex, increasing awareness and reducing fatigue. Caffeine has been reported as an inhibitor of ATM and ATR kinase, and theophylline has activity as a bronchodilator agent, phosphodiesterase inhibitor, anti-inflammatory, anti-tumor, immunomodulatory and as a strong inhibitor to regulate the catalytic activity of alkaline phosphatase (Al-P). Likewise, resveratrol, this compound is thought to act like antioxidants, protecting the body against damage that can put you at higher risk for things like cancer and heart disease. Based on the availability and activity of these three compounds, transformation of caffeine, theophylline and resveratrol is interesting to do. In previous studies, it has been reported caffeine derivatives with various substituents at the C-8 position have activity as adenosine receptor antagonists, acetylcholine esterase and monoamine oxidase inhibitors. The transformation of caffeine at C-8 position is usually carried out through the formation of halides such as Br and Cl. The transformation is carried out through several reaction steps and using reagents that are not in accordance with the principles of green chemistry. In this study, transformation of theophylline and caffeine compounds at the C-8 position was carried out through a fluorination reaction. Fluorination of compounds is carried out using Selectfluor™ which is a stable reagent, non-hydroscopic, crystalline solid, easy to handle, has a long shelf life and can fluorinate compounds in only one step reaction. It is a new method that has never been done in previous studies. The structure of the synthesized compounds was determined based on NMR spectroscopic data. Six compounds have been successfully synthesized, 8-fluorocaffeine, 8-(3-bromopropyl) aminecaffeine, 8-(4-((2-isopropoxyethoxy)methyl)phenoxy)-caffeine, 7-benzyltheophylline, 7-benzyl-8-fluorotheophylline, and 2',6'-difluororesveratrol. In conclusion, in this study, five purines derivatives and

one fluorinated compound from resveratrol have been successfully synthesized.

Keywords: *Caffeine, theophylline, resveratrol, selectfluorTM*

ABSTRACT ID: CHEM-11

Xanthorrhizol and its derivatives as the inhibitors of Caspase-7

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Abstract

Xanthorrhizol (1) is a bisabolene sesquiterpene found as the main terpenoid constituent of the *Curcuma xanthorrhiza* rhizomes. The compound is reported to having a range of biological activities, including as anti-estrogenic, anti-inflammatory, antioxidant, anti-hyperglycemic, nephroprotective, and hepatoprotective properties. Although the biological properties of 1 has a low selectivity, this fact showed that 1 has the potential as a bioactive molecule. To increase its selectivity, as well as to be more potent its biological properties, we had synthesize six derivatives of 1 using a number of chemical reactions, including nitration (followed by nitro reduction) and substitution reactions. The nitration reaction resulted two isomer ic nitroderivatives, namely 2-nitroxanthorrhizol (2) and 4-nitroxanthorrhizol (3). Reducing of 2 by acetic acid yielded 2-aminoxanthorrhizol (4). In the substitution reaction of the phenolic-OH group afforded 4-(3-(2-methyl-5-(6-methylhept-5-en-2-yl)phenoxy) propyl)morpholine (5), 6,7-dimethoxy-3-(3-(2-methyl-5-(6-methyilhept-5-en-2-yl)phenoxy)propyl)quinazoline-4(3*H*)-on (6), and *N*-benzyl-3-(2-methyl-5-(6-methylhept-5-en-2-yl)phenoxy)propane-1-amine (7). The structures of these derivatives were determined analyzing their NMR and mass spectral data. Compounds 1-6 were tested for their capacity to inhibit caspase-7, the enzyme that responsible for a diverse physiological and cell-damaging stressors and delaying the onset of apoptosis. The results showed that only 2 and 3 that can weakly inhibit the enzyme activity (~15% inhibition). In conclusion, six derivatives had been synthesized from xanthorrhizol (1), which only the derivatives 2 and 3 that showed inhibition to the caspase-7.

Keywords: *Synthesis, Xanthorrhizol, Caspase-7*

ABSTRACT ID: CHEM-12

Esterification reaction and antioxidant activity test of xantone derivatived compounds isolated from the mangosteen peel (*Garcinia mangostana* L.)

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Abstract

Esterification reaction and antioxidant activity test of xanthone derived compounds isolated from the mangosteen peel (*Garcinia mangostana* L.) have been carried out. Mangosteen peel was extracted by maceration with ethanol, followed by partition extraction with n-hexane, and chloroform. Partition results were tested for antioxidant activity with DPPH. The antioxidant active fraction was then separated by column chromatography, analysed for xanthone derivatives with UV-Vis, added shift reagent, FTIR, and tested for phenolic compounds. The xanthone compound was then esterified with anhydrous acetic acid using a sulfuric acid catalyst. The esterification results were separated by column chromatography and tested for antioxidant activity, FTIR analysis, and LCMS/MS. The results of the antioxidant activity test showed that the most active fraction was n-hexane (IC_{50} 114.8 µg/mL), then the chloroform fraction (202.59 µg/mL), water fraction (407.36 µg/mL), ethanol crude extract (482, 79 µg/mL). Xanthones were esterified with IC_{50} 219.29 µg/mL, there was a decrease in the antioxidant activity of xanthones after esterification. The results of the xanthone chloroform fraction test with UV-Vis showed that there were two peaks at 224.50 nm and 316 nm wavelengths. The addition of shift reagents NaOH, $AlCl_3$, and $AlCl_3$ + HCl showed a bathochromic shift. Phenolic analysis of the chloroform fraction, obtained a total phenol content of 77939.94 mg GAE/100 mL The identification results of LCMS/MS from xanthone esterification results obtained several compounds such as: manopiranoside; 1,3,6-triolate-α-mangostin;1,3,6-trihydroxy-α-mangostin, esterified xanthone compounds such as: 3-O-acetyl-α-mangostin; 3,6-di-O-acetyl-α-mangostin; 3,6,7-tri-O-acetyl-α-mangostin.

Keywords: *antioxidant, esterification,* Garcinia mangostana*, xanthone, xanthone monoacetate.*

ABSTRACT ID: CHEM-13

Absorption of lead (Pb) levels of polluted soils and their accumulation in gumitir plants (*Tagetes erecta* L.)

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Abstract

Lead (Pb) is a pollutant that is commonly found in agricultural soils and even often contaminates plants that grow on the soil. One way to reduce the content of heavy metal contamination such as Pb in agricultural soil is through phytoremediation. The purpose of this study was to reduce the content of Pb in agricultural soils. The method used was remediation by planting gumitir (*Tagetes erecta* L.) plants on the soil added with various concentrations of Pb^{2+}. The results showed that before planting with gumitir, the soil A, B, C added with Pb of 100; 200; and 400 mg Pb/kg soil, respectively, having the concentration of 108.97±2.25; 214.18±5.47; and 447.04±4.89 mg/kg, respectively, while on the harvesting time the concentration of Pb was 100.52±1.66; 170.04±2.88; and 397.98±2.24 mg/kg, respectively. The part of the plant that absorbed the highest Pb was the root, which was 47.01±4.52 mg/kg. The effectiveness of Pb absorption by gumitir plants in A, B, and C soils were < 1, so the mechanism in accumulating lead metal is less effective or called phytostabilization.

Keywords: *lead,* Tagetes erecta *L, phytoremediation, phytostabilization*

ABSTRACT ID: CHEM-14

Prototype on anaerobic deposition reactor based on sulphate reducing bacteria for laboratory wastewater treatment

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Abstract

Laboratory liquid waste is classified as hazardous waste that is disposed into the environment media. It will be very risky to environmental health. In this study, the use of a consortium of Sulphate Reducing Bacteria (SRB) was studied which was grown simply in an anaerobic column. SRB suspension was applied to the prototype anaerobic bioreactor to reduce heavy metal content and pH. SRB was grown and combined with the treatment of fermented compost and Postgate's media to optimize the performance of the bioreactor in reducing heavy metals. This research formulated that the SRB solution nursery as the optimal bioreactor activator after 15 days with the composition of the growth medium consisting of Postgate B solution (65%), Fermented compost liquid (30%) and active suspension liquid (5%), with a total population of cell colonies up to 1.2 x 10^5 CFU/mL. The bioreactor requires an acclimatization phase for 15 days, after the phase, sulphate and heavy metal ion reduced significantly. Combination of fermented compost with the Postgate solution effective in growing SRB. Bioreactor with 30% compost fermented effective in reducing Pb metal ions on 11 days, but for Cu and Fe metal ions were effective after 18 days. So the SRB bioreactor prototype with nutrient modification is effective within 18 days of treatment.

Keywords: *Laboratory wastewater, Sulphate Reducing Bacteria and Bioreactor prototype*

ABSTRACT ID: CHEM-15

Silver nano particles biosynthesis using soursop leaves water extract and its application as a photocatalyst in the photodegradation of congo red

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Abstract

Silver nanoparticles (AgNPs) was synthesized by mixing $AgNO_3$ solution with soursop leaf water extract. The water extract of soursop leaf contains compounds including flavonoids and tannins which can reduce Ag^+ to Ag^0 and stabilize the silver as nanoparticles. The synthesis was conducted at volume ratios of soursop leaf extract to 1 x 10^{-3} M $AgNO_3$ solution varied at 1:9, 2:8, 3:7, 4:6, and 5:5 (v/v) under varied temperature of 40, 50, and 60°C. The formation of the AgNPs was confirmed by intense absorption at 433.40 nm on the UV-Vis spectrophotometer and analysis with Particle Size Analyzer (PSA). The optimum volume ratio was obtained at 3:7 at 40°C which produces AgNPs with particles sizes of 49.30 nm, Polydispersity Index (IPd) value of 0.232, and a zeta potential of -6.41 mV. The AgNPs was applied as a photocatalyst in the degradation of congo red, and we found the optimum conditions were achieved at nanoparticle volume of 1 mL, irradiation time of 3 hours, and pH 2. The photodegradation of Congo Red under these conditions was 98.69±0.002% out of 100 mg/L of congo red aqueous solution. These findings suggested that the AgNPs can photodegrade congo red dye effectively.

Keywords: *silver nanoparticles, bio reductant, soursop leaf, photodegradation, congo red*

ABSTRACT ID: CHEM-16

Preparation and characterization of bamboo charcoal activated $ZnCl_2$ as an adsorbene *Remazol Brilliant Blue*

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Abstract

Activated charcoal is one of the most popular adsorbents today, it has high adsorption capacity, can be regenerated, its use is simple and multifunctional. This study aims to make bamboo-based activated charcoal with $ZnCl_2$ activator. The research began with the manufacture of charcoal through carbonization of bamboo at a temperature of 650°C for 90 minutes. Then the charcoal was activated with 0.02 M $ZnCl_2$, characterized according to SNI 06-3730-1995. Furthermore, optimization of adsorption parameters such as time, pH and initial concentration and their effect on adsorption capacity was carried out. The results showed that the contact time was 60 minutes, pH 2 and adsorption capacity were 11.56 mg/g, 8.96 mg/g for activated and non-activated charcoal, respectively. Activated charcoal has met SNI standards for all parameters, while charcoal without activation does not meet one parameter, namely the absorption of methylene blue is less than 120 mg/g.

Keywords: *activated charcoal, activator, adsorption, bamboo.*

ABSTRACT ID: CHEM-17

Validation of phosphate analysis method with spectrophotometer

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Abstract

The phosphate method with spectrophotometer that used in this research is not included in the SNI method. This study aims to determine the results of validating the method, and to gain confidence that the test produce are accurate and correct data. The parameters used to validate are linearity, LOD and LOQ values determined by measuring the absorbance standard of 0.0; 0.1; 0.5; 1.0; 2.0; 4;0 and 6.0 mg/L, whereas precision and accuracy determined by measuring the sample's absorbance, that used the standard solution 5.0 mg/L, which was repeated 12 times. The standard solution calibration curve, the regression equation is y=0.0866–0.004 and correlation coefficient (r) is 0.9997. The acceptability limit determined by SNI 06-06989.31-2005 is r≥0.97. The LOD and LOQ values obtained are 0.0855 and 0.2848 mg/L. Precision can be determined by value of %RSD and 2/3 Hortwitz were 0.855 and 12.122, where the method is considered valid if the value of %RSD < 2/3 Hortwitz. The accuracy value can be seen from the value of % recovery obtained by 98.97%. Accepted accuracy requirements are in the range of 80-100%. From the results of the validation parameters, concluded that the phosphate method with spectrophotometer is valid, and suitable to be used in analysis phosphate levels.

Keywords: *method validation, phosphate analysis*

ABSTRACT ID: CHEM-18

Loaded silver from photographic waste on ZnO/active carbon for visible photodegradation of methylene blue

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Abstract

Ag-ZnO/Active Carbon photocatalysts were prepared by photoreduction of Ag^+ on ZnO/AC in order to enhance its photocatalytic activity to degrade of methylene blue under visible light. The Ag^+ solution that used as a precursor taken from photographic waste with three dilution variations, namely 10P, 3P, and 2P. The resulted photocatalysts were characterized by using X-Ray Diffraction (XRD) and Fourier Transform Infra Red (FTIR) and then its were used to degradate the methylene blue. The degradation test include the determination of the optimum radiation time, optimum pH, optimum concentration, and the effectiveness of methylene blue photodegradation at optimum conditions. The XRD patterns showed that the crystals structure of ZnO are hexagonal wurtzite. The FTIR spectras revealed that the photocatalysts contains Zn-O strain, fungsional groups of C=C aromatic, C=O, C-H, and O-H. The photodegradation test of photocatalyst on methylene blue showed that the optimum conditions were 360 minutes of radiation times, pH 10, and 100 ppm methylene blue concentration. The Ag(10P)-ZnO/Activated carbon photocatalyst exhibited the highest photodegradation activity with percentage degradation (99,11 ± 0,01)%.

Keywords: *photodegradations, methylene blue, photographic waste, Ag-ZnO/Activated carbon*

ABSTRACT ID: CHEM-19

Regeneration of CaO/K_2O-TiO_2/H composite catalyst after used for biodiesel synthesis: the effect of desorption solvents and calcination temperatures

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Abstract

Catalysts can enhance the reaction rate in biodiesel synthesis. Solid catalysts have advantages over liquid catalysts, one of those can be regenerated. Catalyst regeneration can be carried out using desorption solvents and calcination temperatures. The purpose of this study was to observe the effect of variation in desorption solvents and calcination temperatures in regenerating the CaO/K_2O-TiO_2/H composite catalyst after it is used for biodiesel synthesis from used cooking oil in a one-stage esterification-transesterification process. The catalyst was prepared by CaO prepared from eggshell which is impregnated by KOH and loading TiO_2/H to form CaO/K_2O-TiO_2/H composite. The composite is used as a catalyst for converting used cooking oil into biodiesel in a one-stage process. Furthermore, the catalyst from the process was regenerated with desorbing solvents (ethanol and acetone) and calcined at temperatures of 400, 500, 600, and 700°C. The results showed that acetone desorption after used catalyst in cycle-3 was generating higher biodiesel yield of 65.32±0.29% than ethanol (60.47±0.61%). Calcination temperature regeneration also has an effect in increasing the conversion ability into biodiesel and the highest temperature was at 600°C (biodiesel yield of 84.86±0.51%). The performance of the catalyst can be increased by varying desorption solution and calcination temperature methods, so it is important to be considered.

Keywords: *biodiesel, calcination temperature, CaO/K_2O-TiO_2/H composite catalyst, desorption solvent, regeneration*

ABSTRACT ID: CHEM-20

The Effectivity of methanol extract of jackfruit leaves (*Artocarpus heterophyllus* Lam.) as natural inhibitor of ST37 steel placed on corrosive solution of NaCl

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Abstract

Using corrosion inhihitor is one of many ways to delay the corrosion process. This inhibitor chemicals usually are added to the surrounding of the metal in order to react with species igniting the corrosion process and decrease the rate of the corrosion itself in the surrounding. The purpose of this study was to know the effectivity of methanol extract of jackfruit leaves in decreasing the rate on SF 37 steel corrosion placed at corrosive solution of sodium cloride (NaCl) 3%. The concentration of the extract was varied of 0.2, 0.4, 0.6, 0.8, and 1.0 % and the temperature of the solution was also varied of 30, 40, 50. And 60◦C. The method to determine the rate of corrosion was based on the weight losing during the corrosion process. The phitochemical tests and based on FTIR showed that the jackfruit leaf extract contains of alcaloids, flavonoids, tannins, steroid, and triterpenoids which have potency to decrease the rate of corrosion. The optimum concentration of the extract to decrease the rate of the corrosion was 0.8% with 86,04% effeciency. Meanwhile, increasing the temperature leads to the higher rate of the corrosion. As the conclusion, the rate of corrosion of ST 37 steel placed on corrosive solution of NaCl 3% at 30◦C could be decreased using the methanol extract of jackfruit leaves of 0.8%.

Keywords: *ST 37 steel, methanol extract of jackfruit leaves, corrosion inhibitor, corrosive surrounding of NaCl*

ABSTRACT ID: CHEM-21

Study of X-Ray diffraction characterization of nanoparticles core-shell $CoFe_2O_4$/ZnO

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Abstract

Water pollution regarding the use of textile colouring waste is known to be very harmful and can cause health problems, such as skin irritation, allergic, breathing problems, and poisoning. The method to reduce levels of textile colouring waste is using nanomaterials. Mostly nanomaterials that can be used to handle this problem comes from metal oxide TiO_2 and ZnO. Although these two materials can adsorb the waste effectively, but those can't separate easily from the sample waste and have high enough bandgap (> 3 eV) so that it needs UV in high energy for photocatalytic process. Because of that, we aim to prepare another nanomaterial that needs lower energy of UV, such as core-shell $CoFe_2O_4$/ZnO which had been synthesized by co-precipitation process using Fe^{3+} ions from iron-sand with heavy concentration of iron and $CoCl_2.6H_2O$ as Co^{2+} precursor. Core-shell nanoparticles that had been made are characterized using X-Ray Diffraction (XRD) to determine the crystal structure and phase composition of the nanoparticles. Lattice crystal (220), (311), (400), (511), (622) showed spectra patterns of $CoFe_2O_4$ and (002) showed specific spectra pattern of ZnO. From the data, we can conclude that core-shell $CoFe_2O_4$/ZnO was successfully synthesized.

Keywords: *co-precipitation, core-shell, diffraction, nanomaterials, X-ray*

ABSTRACT ID: CHEM-22

Fabrication of Metakaolin-Based Lightweight Geopolymer Membrane with Cotton Fiber Reinforcement for Methylene Blue Separation

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Abstract

The membrane is one of the dye wastewater treatment methods that have economic value, can be used repeatedly, and is more environmentally friendly. The development of metakaolin-based geopolymer membrane as one type of inorganic membrane offers advantages such as fabrication efficiency, and lower energy consumption compared to other ceramic membranes, also has the potential to be developed because they are more homogeneous, amorphous, and have good chemical resistance compared to fly ash-based geopolymer. This research has studied metakaolin-based geopolymer to obtain high compressive strength, then modification with the addition of laminar cotton fiber reinforcement (gauze) to improve mechanical stability and flexibility because mechanical strength is important for sustainable membrane utilization. The highest compressive strength achieved by metakaolin-based geopolymers in this study is 46,3 MPa. The fabrication of lightweight geopolymer membrane composites with gauze fiber is also carried out with the addition of additives (H_2O_2) to regulate and form pores so that the water flux increases. Furthermore, the performance of the membrane is tested to determine the value of the permeation flux and the percentage (%) of removal of the metakaolin-based geopolymer membrane which will be applied for the separation of blue dye (MB) waste. The highest water flux of the membrane is 25,6 $L.m^{-2}.h^{-1}.bar^{-1}$ at 0,8 bar. The percentages (%) of MB removal from water with variations of 6, 8, and 10 ppm on this membrane respectively were 94.55%, 95.85%, and 94.31% at 0,8 bar.

Keywords: *geopolymer, metakaolin, membrane, wastewater treatment, mechanical strength, reinforcement*

ABSTRACT ID: CHEM-23

Variation of enzyme-substrate ratio in the hydrolysis of germinated red beans (*Phaseolus vulgaris* L.) protein by papain enzyme

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Abstract

Germinated red bean is a potential source for protein hydrolysate production considering that germination can improve the soluble protein content of the red bean. This study aimed to prepare the hydrolysate protein from the hydrolysis of the germinated red bean protein by using papain enzymes with the variation of enzyme/substrate (E/S) ratio. The E/S ratios used in this research were 3, 4, 5 and 6%. The free amino acid (FAA) content of the protein hydrolysate was determined by using the Ninhydrin method and the degree of hydrolysis (DH) by using the Biuret method, both with UV-Vis Spectrophotometer. The results showed that the higher the E/S ratio, the more the FFA and the soluble protein content, also the higher the DH value or the more the peptide bonds broken and the shorter the peptide chains formed. The highest value of FFA, soluble protein and DH were 0.5536, 2.0726 mg/mL and 36.02%, respectively, produced by using the E/S ratio of 6%.

Keywords: *germinated red beans, protein hydrolysate, papain enzyme*

ABSTRACT ID: CHEM-24

Scanning electron microscope analysis of interaction zinc oxide with lactic acid bacteria corporated in yogurt

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Abstract

One aspect of animal production that needs to be developed to realize smart animal farming is "prime and future milk products". Improvement of functional properties needs to be done in order to increase the effectiveness of bioactive compounds absorption in probiotic yogurt. Zinc is a type of material that is known to improve the quality of food products. The results of making yogurt containing zinc have been done. The morphology of the yogurt and mixture of yogurt contain zinc oxide (ZnO) using a scanning electron microscope (SEM). The SEM test included examining the yogurt surface layer at a magnification of 10,000x and analyzing the chemical composition of the sample using energy-dispersive X-ray spectroscopy (EDX). The 10,000x magnification allows to examine the structure of lactic acid bacteria and materials embedded in the yogurt matrix. A) yogurt; B) yogurt + ZnO; C) yogurt + probiotics; D) yogurt + probiotics + ZnO were the samples tested. The addition of ZnO to the yogurt structure increased the compactness and homogeneity of the structure, according to microscopic visual inspection (yogurt B and D).

Keywords: *SEM morphology, probiotic, yogurt, zinc oxide*

ABSTRACT ID: CHEM-25

The role of cem-cem leaf extract (*Spondias pinnata* L.f Kurz) as hypolipidemia in obese wistar rats

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Abstract

Atherosclerosis is a condition in which the walls of the arteries thicken as a result of the accumulation of fatty materials such as cholesterol and is one of the causes of cardiovascular disease. This study aims to determine the effect of intake of cem-cem leaf extract on cholesterol metabolism in inhibiting the absorption of lipids in the intestine so as to reduce blood plasma lipids of obese wistar rats. The research design used was a randomized post-test only control group design, which was carried out on rats. Thirty rats were divided into five groups, namely, normal, positive control, negative control, treatment 1, treatment 2, each 6 rats. The normal group was only given standard food, negative control was given standard food plus 100 mg of cem-cem leaf extract, positive control was given standard food and high cholesterol food, treatment 1 was given standard and high cholesterol food plus 100 mg/KgBW/day cem-cem leaf extract. cem, treatment 2 was given standard food and high cholesterol food plus 200 mg/KgBW/day of cem-cem leaf extract. After 28 days of treatment, blood plasma samples were taken for examination of total cholesterol, LDL, HDL, triglycerides. The results of this study showed that cem-cem leaf extract was able to reduce LDL cholesterol, triglycerides and increase HDL in obese wistar rats.

Keywords: *cem-cem leaf extract, LDL, HDL*

Oral Presentation Abstracts
COMPUTER SCIENCE

Artificial Intelligent, Big Data and Data Science, Network Computing, Information System, etc.

ABSTRACT ID: IF-01

Application of IoT (internet of things) for management and digitalization of performing arts towards bali rise from the Covid-19 pandemic: downstreaming of cppu research and udayana university innovation

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Abstract

Target of this program is "Pokdarwis Heritage Pusaka Munggu" which is a tourism awareness group in the Munggu Indigenous village, Badung Regency, Bali. This Pokdarwis is engaged in the business of performing traditional Balinese arts. The decline in tourist visits due to the Covid-19 Pandemic to Bali certainly has a negative impact on the tourism sector, and this time PUMA Partners are no exception. A number of systems have also been developed previously, but the drawback of some of these systems is that Balinese cultural information is still very lacking, separate and does not yet have a system to handle payments in it. By utilizing the CPPU and INOVASI scheme research results system from the previous year with the Crowd Sourcing-based Integrated Art Performance Management Information System Application. With this system, it is hoped that later access to Balinese culture and tourism in Bali will become more practical, easy and complete. The specific goal that is expected is that partner MSMEs can increase the amount of income and ultimately the welfare of partner MSMEs is achieved and sustainable.

Keywords: *SMEs, performing arts, Taripedia, FGD, Pokdarwis, Tourism*

ABSTRACT ID: IF-02

QR-code based participant search information system

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Abstract

The Conference is a place for the dissemination of research. SENASTEK is a Seminar Nasional Science and Technology organized by LPPM Udayana University which was attended by thousands of researchers. The search for participants to conduct dissemination is still using conventional methods. The development of information technology today is constructive in every way, one of the technologies that are developing is the use of QR-Code technology. With the development of mobile devices such as smartphones, the use of QR-Codes has become easier. Conference participants only need to scan the QR-code on the marker that has been provided, then they will be asked to go to the search website page. Conference participants only need to enter their name and research title to be able to find out when the schedule for the presentation and the room for the presentation will be. Using a web-based information system combined with a QR-Code can make it easier for participants and committee members to attend the conference.

Keywords*: Information System, QR-Code, Conference*

ABSTRACT ID: IF-03

Natural language analysis of WHO ICD-10 data to reduce diagnosis errors

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Abstract

In most cases, clinicians do not use the ICD-10 standard established by the WHO for diagnosing diseases. These issues may result in outcomes that are undesirable from the standpoints of patient safety and the law. The WHO ICD-10 standard is a collection of diagnoses that can't be effectively searched using MySQL's native search mechanism. Therefore, to automatically produce several keywords for each ICD-10 code, researchers are interested in analyzing the natural language analysis of WHO ICD-10 data. When diagnosing illnesses, it is envisaged that the availability of numerous types of keywords can lead to more fruitful search results. Natural language analysis, a technique for removing stop words from sentences and simultaneously assessing the semantics of the language from which the keywords will be extracted, makes it possible to do this. The WHO ICD-10-Based Disease Diagnosis application put forth in the 2021 PUPS scheme research batch 1 will use the findings of this analysis.

Keywords: *Analisis Natural Language, WHO, ICD-10, stop words, diagnosis*

ABSTRACT ID: IF-04

Mobile-based redesign of Bali learning for children increasing training outcomes

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Abstract

Today's rapidly developing computer technology provides convenience for life. Its use is to provide information, data processing and document creation. Document creation can be done using a mobile device, so that the creation can be done anytime and anywhere. This convenience is also widely used not only to create documents with alphabetic letters but also with special characters. Documents with Balinese-script consist of special characters that are different in shape from latin letters. They consist of wianjana script, voice, tengenan and others. The writing complies with certain rules. This is what makes Balinese-script making more difficult to do. Beginner-stage learning carried out for children requires help to facilitate learning. So, in this study an application will be made that will help facilitate and improve the results of training in making mobile-based Balinese-cripts. Every character created will be converted to a Balinese character that is aligned. Testing is done by testing the functional aspects using black box testing and testing the results of the training by testing the level of truth of each typed character. Testing the results of the training involved 12 research subjects. Assessment of learning outcomes was given by an assessor by the teacher. The results showed that some of the black box testing criteria worked with expectations such as being able to create characters, delete, open and save Balinese scripted documents made by children via smartphones. Meanwhile, the learning outcomes have an average of 720 characters every hour. These results indicate that learning outcomes greater than 710 are categorized as good judgments by experts.

Keywords: *Balinese-script, black-box, leaning outcome, mobile-base*

ABSTRACT ID: IF-05

Handwritten Balinese character recognition using backpropagation

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Abstract

The heterogeneity of society and routines in the modern era has caused the use of Balinese script to be almost non-existent in everyday life. This situation causes the erosion of the noble culture of the Balinese script. Seeing this situation, of course, a breakthrough is needed to preserve and increase interest in the use of Balinese script. One strategy that can be implemented is to introduce Balinese script from an early age through an educational application to introduce Balinese script. In recognizing this Balinese script pattern, there are various pattern recognition methods that can be used, one of which is an artificial neural network (ANN) with a learning method, namely backpropagation. Backpropagation performance is proven to be superior in optimizing neural network weights. In this research, an application for recognizing Balinese script has been built with the application of backpropagation in recognizing characters. Backpropagation performance has been tested using a dataset of handwritten imagery in the form of Balinese script. A total of 264 characters consisting of 198 images for training and 66 for testing. The results showed that the highest average accuracy was obtained using a learning rate value of 0.5 and the number of neurons in the hidden layer 30 with an average accuracy in artificial neural networks of 81.72%.

Keywords: *backpropagation, classification, artificial neural network, Balinese script.*

ABSTRACT ID: IF-06

Redesign of smoothdraw application into modrescript based on total ergonomic approach increasing health quality and productivity of modre learning writing in information engineering students of Udayana University

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Abstract

Balinese script is a form of Balinese writing culture. Based on its function, the Balinese script can be divided the wreastra script, the swalalita script, and the modre script. The form of sacred script as in writing ulap-ulap, rurub, kajang and rerajahan. The mental load in writing modre characters is measured by the cognitive load in learning to write modre characters. While the physical load was measured by hand muscle complaints and eye fatigue felt by students in completing the assignment of writing modre characters. Decreased cognitive load, hand muscle load and eye fatigue will improve health in learning to write modre script so that in the end it can increase student learning productivity. In this study, the modre script writing tool, namely the ModreScript application, was designed with a total ergonomics approach. This study used a real experimental design with a randomized pre and posttest control group design. The research sample was taken randomly as many as 15 objects as the control group and 15 objects as the treatment group from 63 affordable populations, namely fifth semester students who met the specified inclusion and exclusion criteria. Then the parameters of cognitive load, hand muscle load, eye fatigue and learning outcomes were measured to determine the level of health and learning productivity of students in writing modre characters. In this study, it was found that the implementation of ModreScript based on a total ergonomics approach in writing modre characters significantly reduced cognitive load by 14.60%, decreased hand muscle load by 48.29%, decreased eye fatigue by 21.32% and increased learning outcomes by 16. 0.05% compared to using the HCI-based SmoothDraw application. With a decrease in cognitive load, hand muscle and eye fatigue as well as an increase in learning outcomes, it can be said that the ModreScript application based on a total ergonomics approach can improve the quality of health in writing modre characters.

***Keywords**: Writing modre characters, total ergonomics approach, HCI, mental and physical workload, health quality*

ABSTRACT ID: IF-07

Artificial neural network modelling on estimating family hope program assistance

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Abstract

The estimation of the Family Hope Program (PKH) is carried out to predict the amount of assistance received by beneficiary households to realize the targeted assistance program. The program targets are education and health, with the criteria for recipients being pregnant women, toddlers, pre-schoolers, elementary-high school children, persons with disabilities and the elderly. The problem solving model of the constraints of the family of hope program in the field has been analyzed because there are often miss targeting. This research aims to build a model for estimating the amount of assistance received based on data from the Tabanan Regency Family Hope Program in 2019. The system modeling uses an Artificial Neural Network algorithm with a multilayer perceptron (MLP) architecture. The results of the study resulted in a model with a combination of hidden layer and max epoch parameters giving the optimal architecture. Based on the testing process, the best architecture is obtained with 9 input layers, 500 hidden layers, 1 output layer, 375 epochs with an average R2 Score of 0.6958. The effect of changing the hidden layer and max epoch parameters is the optimal parameter of the Artificial Neural Network algorithm in this study, by making these parameters as independent variables and other parameters as fixed variables.

Keywords: *Artificial Neural Networks, Multilayer perceptron, Family Hope Program, R2 Score*

ABSTRACT ID: IF-08

Development of dam monitoring and early warning applications based on temporal imagery and ultrasonic sensors

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Abstract

A broken dam is a type of catastrophic collapse characterized by the sudden, rapid, and uncontrolled release of stored water or the possibility of an uncontrolled release. Between 2000 and 2019, there were more than 200 dam breaches worldwide, including Indonesia, as happened in Situ Gintung and Sambaniru, East Sumba. A dam breach can cause large-scale damage and loss of many lives and have a major impact on the destruction of the civilian population and the environment. Based on the problems above, after an in-depth study of the dam monitoring system from a number of previous studies, the research is still not fully automated in providing an analysis result and still relies on the monitoring of officers who often make mistakes or delays. So it is necessary to develop a fully automated dam monitoring system using a raspberry pi as a microcontroller which includes monitoring water levels with ultrasonic sensors and dam images with night vision cameras to observe the dam burst. The resulting data will be sent to a website to be observed. If the water overflows according to the water level status, an alert will be sent as early as possible. If the difference in the dam image exceeds the threshold, a warning will be sent. The alert system uses an SMS Gateway because alerts can be carried out more quickly. Tests carried out by testing the quality of data transmission with parameters delay, packet loss and throughput. Based on the test results with TRL meter/Teknometer, the results of the preliminary study have reached TRL Grade 3.

Keywords: *Monitoring, Ultrasonic Sensor, Temporal Image, SMS Gateway, Dam*

ABSTRACT ID: IF-09

UI/UX design prototype patanjali yoga asana expert system application for beginners based on android

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Abstract

The UI/UX design of the Patanjali Asana Yoga Expert System application for Android-based beginners has been carried out using the figma interface design tool. This study aims to create an expert system application product for Asana Yoga Patanjali for beginners based on Android. The initial step in the application's user interface (UI) design needs special attention because mobile phones have limited handheld screens. For this reason, the arrangement of switching between views accessed by users needs to be as efficient as possible to provide a user experience (UX). The results of the study found that on the Home screen, photos of Asanas, descriptions of the expert system and Patanjali Yoga Asanas were displayed. On the bottom page you can click on how many buttons link to the next screen. The Expert System button directs expert knowledge about asanas and their therapy, the Contact Button to provide input and questions related to Yoga Asanas, the Gallery Button displays a video link for movement and some yoga asanas and Asana names, the settings button to set the screen mode to light or dark.

Keywords: *UI/UX Design, Expert System Application, Asana Yoga Patanjali, Figma*

ABSTRACT ID: IF-10

A digital portal for Balinese folklore with natural language processing framework

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Abstract

Balinese folklores contain local wisdom that must be preserved for future generations. In this era of technology, the sustainability of Balinese folklore can be ensured through digitalization. Our research aimed at the preservation of Balinese folk tales by developing a Website with advanced features including automatic summarisation, identification of characters, and clusterization based on similar topics among other things. To aid in achieving the aforementioned research objective, we develop a Balinese natural language processing framework. This framework consists of essential tools for processing Balinese texts including tokenizing, stemming, and named entity recognition. The automatic summarization is implemented by utilizing the genetic algorithm. Identifying the characters is achieved through named-entity recognition while the veracity of the information is validated through truth finding. The clusterization of the folk tales is accomplished by first identifying latent topics through Latent Dirichlet Allocation (LDA) and then grouping a pair of documents with the highest similarity in a bottom-up approach. This grouping process is carried out until the intended number of clusters has been reached.

Keywords: *Balinese, genetic algorithm, LDA, summarization, truth-finding*

ABSTRACT ID: IF-11

Design and development of air quality prediction system suspended particulate matter with backpropagation algorithm

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Abstract

Suspended Particulate Matter (SPM) is particulate dust emitted from several activities such as transportation and industrial factory areas, one of which is PM10. Currently particulates as one of the causes of air pollution are quite a concern in various countries which have an impact on human health. suspended particulate matter stays in the air and does not easily settle and float in the air, on average around 50% - 60% of the suspended particles are 10μm or PM10 in diameter dust so it is very easy to inhale and enter the lungs. So that this research was appointed to predict the concentration of suspended particulate matter using the Backpropagation Algorithm. In this study, three artificial neural network models were built, each of which has a different level of accuracy, the Backpropagation network architecture that produces the highest accuracy value is by using a network scheme of 3 input layers, 20 hidden layers and 1 output layer with a learning rate. 0.8, the target error is 0.001 and the number of epochs is 10,000, the predicted results of the suspended particulate matter concentration obtained using this model can be said to be good because it produces an MSE value of 0.037 with an accuracy rate of 95.526 %.

Keywords: *Suspended Particulate Matter, Air Quality, Artificial Neural Network, Backpropagation, artificial neural network*

ABSTRACT ID : IF-12

Face recognition-based automated attendance recording system

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Abstract

This paper discusses the use of facial recognition methods in recording class attendance. Attendance recording in the conventional system is done by signature and takes time and interferes with attention in the learning process. The system built can perform automated attendance records based on face recognition. A database is needed to record the face dataset of the learner and record the duration of the student's attendance in class. The face recognition system is implemented in four stages, including: face detection and tracking, face positioning, feature extraction, and classification. The experimental results show that the system successfully recognizes faces and records the duration of the student's presence in the classroom.

Keywords: *face recognition, classification, haar cascade, opencv, attendance system, biometry*

ABSTRACT ID: IF-13

Deep learning for chatbot technology

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Abstract

Chatbot is a technology that imitates humans in having conversations with users. The chatbot engine has the ability to answer or respond to any questions from the user. There are several approaches in chatbot technology, one of which is a machine learning-based method. Machine learning is a part of artificial intelligence technology which is a data-driven method. Deep learning is a special model in machine learning that uses an artificial neural network as its basis. There are three main models of deep learning, namely Convulational Neural Networks, Recurrent Neural Networks, and Transformer models. The transformer model is the most popular transducer model today. The transducer model is deep learning that converts the input sequence to another form. Applications that use Model Transformers are machine translation. Machine Translation is changing the source language to another form of the target language. Similar to Machine Translation, the Chatbot model also converts the question source language to another appropriate response form as the target language. Therefore, this study implemented the Chatbot Model using the Transformer Model utilizing approximately four million question and answer/response pairs as a dataset. The results showed that the accuracy of the Chatbot Model was still poor. The reason is that a balanced question-response data set is required for each topic.

Keywords: *Deep Learning, Transformer, Chatbot, Language Generation, Artificial Intelligence*

ABSTRACT ID: IF-14

Emotion classification based on Convolutional Neural Network (CNN) in Electro Encephalogram (EEG) data

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Abstract

Emotion is a physiological process that is triggered by conscious and/or unconscious perception of an object or situation and is often associated with mood, temperament, personality, disposition, and motivation. Emotion management is very important in every situation so that a person is aware of the emotions he feels. This is important for a person in determining the actions that should be taken so that emotions do not overwhelm him and make significant mood changes in that person. Therefore, it is necessary to recognize emotions to be able to identify and classify human emotions. In this study, research was conducted on the classification of emotions based on EEG signals using the Convolutional Neural Network (CNN). The output of this classification system is four classes of emotional responses, namely hype, relax, gloom and angry. The accuracy obtained by using the CNN method in solving the case of identification of emotional response classes based on EEG signals is 46.8%.

Keywords : *CNN, emotion, EEG, signal Classification*

ABSTRACT ID: IF-15

Development of integrated location identification guideline system with total ergonomic approach for people with neural disabilities

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Abstract

Cognitive needs are basic human needs that are closely related to the need for information, knowledge, and understanding of their environment. For people with blind disabilities, identifying a location is an important thing among their limitations (Widhi, 2013), blind people with disabilities are trained from an early age to be more sensitive in the process of identifying information about the environment using other senses such as touch, hearing, memory, and so on (Widhi 2014). They are based on experience and continuous training trying to always be able to adapt and identify their location and environmental conditions. On the other hand, the development of information technology, especially those related to public service information, is more developed in visual forms such as: information on directions, location, time, weather, and so on, in addition to conventional visual information in the form of bulletin boards and other guidance. . In the process of identifying a location, blind people will find it difficult to identify because facilities such as conventional assistive devices (blind sticks) and existing Guiding Blocks have limitations and of course will need other people to assist the identification process (Widhi 2013), in addition to the level of vision Blind people also vary, ranging from dim vision to total blindness. For this reason, an integrated site identification system will be developed with a Total Ergonomics approach which includes SHIP TTG (Systemic, Holistic, Interdisciplinary, Participatory and Appropriate Technology) for the Blind Persons, both in guiding facilities and integrated information systems.

Keywords: *blind disabilities, location identification, integrated, total ergonomics*

ABSTRACT ID: IF-16

Information retrieval system for its usage services using Tf-Idf and cosine similarity

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Abstract

An integrated information system is one of the basic facilities to support the operations of a company or institution, including educational institutions such as universities. The number of systems that are integrated with each other causes the need to create an FAQ (frequently asked questions) which aims to map questions with the same answer automatically so as to reduce the burden of questions on system managers. This encourages a lot of data about questions and answers, so that it is often difficult for users to find cases or knowledge about system operations that have been experienced before. Departing from this, it is necessary to build an information retrieval (IR) machine that is able to accommodate the user's needs for the desired question or answer. This study implements an IR engine to answer the need for FAQ searches that suit the needs of users of the integrated system. The TF-IDF and Cosine Similarity methods are implemented to get the search results that best match the query given to the system. The test results show that the built-in IR machine is able to produce a F1-Score of 0.79. Based on this value, the system has been able to provide good results, but it should be noted that the precision value can be increased again by implementing additional methods so that it can provide relevant results to user queries.

***Keywords**: FAQ, Information Retrieval, TF-IDF, Cosine Similarity*

Oral Presentation Abstracts
MATHEMATICS AND STATISTICS

Mathematics Education, Algebra, Number Theory, Geometry, Dynamical Systems, Ordinary Differential Equations, Partial Differential Equations, Probability and Statistics, Combinatorics and Graph Theory, Mathematical Aspects of computer Science, Numerical Analysis and Scientific Computing, Control Theory and Optimization, etc.

ABSTRACT ID: MATH-01

Occupational mobility model of tourism sector workers during the COVID-19 pandemic

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Abstract

This study aims to determine the occupational mobility model of tourism sector workers based on socio-economic characteristics and survival strategies during the COVID-19 pandemic. The study was conducted in 8 regencies and 1 municipality in Bali Province, data collection in the field was carried out using a survey method. Research variables include: socio-economic characteristics of workers, occupational mobility, and survival strategy variables. The data analysis method used descriptive analysis and multinomial logistic regression. The results of the study obtained 97.0% of respondents stated that they did occupational mobility. Most of the respondents stated that they experienced 1 job change from before the pandemic to the time of the COVID-19 pandemic. How long does it take to change jobs from the initial job to the next job, 75.8% of respondents stated that they experienced it in less than 6 months, while 24.2% experienced a job change within a period of 6 months to 1 year. The type of respondent's work in the tourism sector before the COVID-19 pandemic was obtained as many as 30.3% worked in transportation, 30.3% in recreation and entertainment, 18.2% in accommodation, 15.2% in food and beverage

services, and 6.1% in travel services. Employment status before the COVID-19 pandemic, obtained 78.8% of respondents with employee status. Respondents' employment status during the COVID-19 pandemic, 69.7% worked alone with workers from unpaid families. Respondents' income during the Covid-19 pandemic when compared to income before the Covid-19 pandemic, all respondents stated that their income had decreased. the average income of respondents before the pandemic was IDR 7,963,636 and income during the pandemic was IDR 1,736,363. Respondents' answers to survival strategies with negative countermeasures such as asset sales, it was found that 27.3% carried out this strategy, by taking loans from informal lenders carried out by 18.2% of respondents, by relying on/proposing government social assistance programs (direct cash assistance, basic necessities, and other assistance programs) was carried out by a small proportion of respondents, the strategy by relying on the assistance of other family members was carried out by 57.6% of respondents. The survival strategy by switching to other types of work was carried out by the majority of respondents (81.8%).

Keywords: *occupational mobility model, occupational mobility, survival strategy, tourism sector workers*

ABSTRACT ID: MATH-02

AISAS model in destination rebranding: a case study of Bali tourism after covid-19

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Abstract

Destination branding is one of the key factors to attract tourist visits. Destinations that have a stronger branding than their competitors are more likely to be visited. As one of the world's favorite destinations, Bali experienced a drastic decline in tourist arrivals during the Corona virus disease (COVID-19) pandemic. The restoration of Bali's image and branding is absolutely necessary after the COVID-19 subsides, considering the Bali economy which heavily relies on the tourism-related sector. This article aims to evaluate the effectiveness of Bali's rebranding through digital media using the AISAS model. The study was conducted in 4 regions in Bali i.e. Denpasar, Badung, Gianyar, and Tabanan regencies; with total 250 respondents selected proportionally and asked to fill out a tested questionnaire. The variance-based structural equation model (PLS-SEM) was applied to evaluate the effectiveness of digital media in rebranding Bali destination. The results of the analysis show three dimensions of the AISAS model - attention, search, and action; significantly affect the effectiveness of rebranding, while interest and share do not show significant effects.

Keywords: *AISAS, Bali, branding, PLS-SEM*

ABSTRACT ID: MATH-03

Application of control theory for stability analysis of the dynamic model of B*ali starling* (*Leucopsar rothschildi)* breeding in West Bali National Park

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Abstract

The objectives to be achieved in this study: 1) examine and develop a dynamic model that can be used to analyze the dynamic balance of the Bali starling captive breeding model, and 2) analyze the parameters of the dynamic model that ensures the stability of the Bali starling captive breeding model in West Bali National Park (WBNP) in a sustainable manner. In this study, Bali starling divided into two groups, i.e. in the wild and in breeding place. The dynamic model that has been built is analyzed for stability around the endemic critical point using the Routh-Hurwitz stability criteria. As a description of the model, a simulation is carried out to get an overview of the suitability of the model built with real conditions in the field. The results of the condition for the existence of a critical point in endemic conditions can be met, if the percentage of Bali starling or eggs transferred to the wild is less than the difference between the percentage of Bali starlings laying eggs and the population growth rate of Bali starlings in WBNP. Another conclusion, the tipping point of the endemic is stable, as long as the percentage of Bali starling that lays eggs is greater than the growth rate of the Bali starling population in WBNP. The dynamic model obtained is expected to be used to assess the sustainability of the Bali starling captive breeding and maximize the benefits obtained in maintaining the Bali starling population in the WBNP area.

Keywords: *Bali starling, compartment of dynamics, endemic critical point, stability of dynamic model.*

ABSTRACT ID: MATH-04

The impact of collaborative and participatory classes on course learning outcomes

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Abstract

Outcome-oriented learning (OBE) with the Student Center Learning (SCL) method is realized in a collaborative and participatory classroom. Collaborative and participatory classes with case study methods or team-based projects are the 7th main performance indicators (KPI) of Higher Education. Students actively in class with discussions and actively seek learning references. This activity motivates each student to learn independently, has a positive and effective impact because students are accustomed to understanding theoretical concepts as well as possible. This study aims to monitor the percentage of courses that apply Case Method or Team-based Project in undergraduate study programs at the Faculty of Mathematics and Natural Sciences, Udayana University and the impact of implementing collaborative and participatory classes on one subject matter. The research method is curriculum review and in-depth interview techniques with the coordinator of study program. The results of the curriculum review on the curriculum reorientation of the undergraduate study program at FMIPA Udayana University obtained an average of 41.51% of the courses have been assigned to collaborative and participatory classes by applying case study methods and team-based projects. One implementation of the Marcov Chain, the collaborative and participatory classroom learning at the Mathematics Study Program shows that this learning model has a positive impact on students' independence in finding references, mastering materials, applying theory in real case of the community and creating more efficient learning. Lessons that normaly need 4 weeks, can be completed in 2 weeks with collaborative and participatory classes.

Keywords: *collaborative class, participatory, key performance indicators, case method, team- based project*

ABSTRACT ID: MATH-05

Analysis of community compliance with the Covid-19 health protocols: a quantitative analytical approach

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Abstract

Factor analysis is a statistical science that is based on the correlation between variables. This method is widely used in social research and specifically provides mathematical models for the explanation of the social sciences. In this study, factor analysis was used to identify the factors that influence the compliance of the people of Bali Province to the COVID-19 health protocol. Based on the results of factor analysis, there are 4 variables from the initial 20 variables that were not included in the analysis because the low communality value was below 0.5. Thus, the remaining 16 variables were reduced to six factors with a total variance of 74.8%. Community compliance in Bali Province is influenced by six factors, namely someone who knows about the importance of health protocols (19,1%), trust in protocols (15,9%), someone who has been infected with COVID-19 (12,2%), sense of concern for themselves and their families (10,1%), government supervision and sanctions (9,3%), and the price of masks affordable (8,2%). Observing this study, it was found that the first factor that played a role in increasing adherence was knowledge about the importance of health care, then there was a sense of trust in health protocols, and a less influential factor was the affordability of masks.

Keywords: *factor analysis, COVID-19, community compliance, health protocol*

ABSTRACT ID: MATH-06

Chaos: predict the unpredictable

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Abstract

Chaos is the state of irregularity patterns that appear to be random and very sensitive with small perturbation. One of the simplest functions that initiate chaos is logistic map with only one-dimensional but has really complex dynamics. Long Short-Term Memory (LSTM) is the type of neural network with time step memory that capable of predicting sequence in time. The chaos time step data could be extracted from the logistic map and predicted as time series with Long Short-Term Memory (LSTM). The traditional statistical methods such as Auto Regressive (AR) and Moving Average (MA) could be used as comparison. Meanwhile the volatility analysis using Generalized Auto Regressive Conditional Heteroskedasticity (GARCH) could analyse the behaviour of chaotic pattern as time series data.

Keywords: *chaos, logistic map, time series, LSTM, GARCH*

ABSTRACT ID: MATH-07

Forecasting Indonesia's inflation rate using deep autoregressive networks

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Abstract

Controlled inflation is an indicator of economic stability of a country. Inflation is the raise of goods and services on certain region which is indicated by the inability of people to purchase. During the last two years since the pandemic plagued every aspect of life in the world. The government through the Ministry of Finance and Commission XI of the House of Representative of the Republic Indonesia have target inflation rate for the 2022 at 3% with assumption of economic growth 5% to 5.5%. Furthermore, the Ministry stressed the difficulty of forecasting inflation rate due to its uncertainty. This suggests the importance of a forecasting methodology to obtain accurate information in spite of this uncertainty. This research aims at predicting Indonesia's inflation rate using deep autoregressive networks (DeepAR). This research also compares the DeepAR with other machine learning methods. DeepAR shows better performance than other methods as can be seen from the small root mean square error. The forecast of the inflation rate suggest that the value fluctuated around 0.5 per cent. This further suggest the stability of inflation.

Keywords: *deep autoregressive networks, deep learning, Indonesia's inflation, machine learning, inflation forecasting*

ABSTRACT ID: MATH-08

Selection of rotation type in factor analysis

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Abstract

Factor analysis involves several steps, such as correlation matrix testing, factor searching, and factor rotation. Factor rotation consists of orthogonal and skewed (non-orthogonal) rotations aimed at achieving a simpler factor solution and redistributing the initial variance. No specific rules have been developed for selecting a particular rotation technique. However, in social research where there is no assumption that the factors formed are not correlated oblique rotation is often used. This study aims to see the similarities or differences in the factor matrix pattern given by the two different rotation methods. The data used in this study is consumer perception data using the Grab application services in Denpasar City with as many as 120 responses. Based on the results of the analysis, the factor matrix pattern given by orthogonal varimax rotation and Promax tilt rotation is not much different. There are six variables with low communality values and cross-weighting that are not included in the analysis. The four factors formed include 14 significant variables in the model. The difference in the pattern of factors produced by these two rotation methods provides different interpretations.

Keywords: *factor analysis, factor rotation, social research*

ABSTRACT ID: MATH-09

Do consumers' preferences differ between traditional vs modern market? A quantitative study using factor analysis

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Abstract

The Balinese traditional market which is defined as a meeting point for sellers and buyers where products' price is obtained through a series of bargaining processes, its existence is getting desperate by modern markets such as supermarkets, hypermarkets, and various another mention. The existence of traditional market is in line with the cultural development of a society. It does not solely have economic values through goods transactions but also stores the values of local cultural wisdom. This study elaborates the determinant factors that affect consumer preferences to purchase daily products at traditional as well as modern markets in 4 cities in Province of Bali. A set of tested questionnaires had been proportionally distributed to 225 respondents at Denpasar, Badung, Gianyar, and Tabanan regencies of Bali for each of market type. By applying explanatory factor analysis, the study concluded that there are consumers' preferences in both markets. Consumers claimed they prefer going to traditional markets because of the chance to make social interaction with the traders while the modern markets' consumers tend to visit and purchase their needs because of the completeness and quality of products offered.

Keywords: *Balinese, consumers' preferences, factor analysis, traditional and modern market*

ABSTRACT ID: MATH-10

Development of game-based interactive learning media for basic numeracy skills

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Abstract

Mathematics is a basic science that becomes the foundation for the development of other sciences, so it is very important to master both from basic education to higher education. However, the irony is from the facts on the ground that there are still many obstacles in learning mathematics. On the other hand, students who are learning objects in the 5.0 era are classified as alpha generation learners, which is a generation that has very high digital abilities. Students are very easy to get digital counting tools so they tend to ignore teacher lectures that they don't think they need. To overcome this problem, a teacher is required to have good digital skills and also creativity in packaging learning that is able to attract students' interest in this alpha generation. Based on this, a research was carried out aimed at developing game-based interactive learning media for basic numeracy skills to improve students' mathematical abilities from the elementary level. The development of information technology today is considered capable of providing solutions to the problems faced. The research method used in this study is a research and development method accompanied by a comparative advantage test of the resulting game product. From the research, it was found that the game-based learning materials produced can attract students' interest in learning and are effective in creating more conducive mathematics learning both online and offline.

Keywords: *counting, educational technology, drill, games, learning innovation*

ABSTRACT ID: MATH-11

The effect of layoffs as the impact of covid-19 on livelihoods in Ubud village

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Abstract

At the beginning of 2020, the world was shocked by the presence of a new virus, namely Covid-19. This virus was originally known to have attacked China in November 2019. World Health Organization (WHO) provides recommendations to temporarily stop activities that have the potential to cause crowds that accelerate the spread of Covid-19. Meanwhile, the Indonesian government also issued policies in the form of Work From Home (WFH), sosial distancing, Pembatasan Sosial Berskala Besar (PSBB), and Pemberlakuan Pembatasan Kegiatan Masyarakat (PPKM). This policy is very influential on the joints of people's lives in various sectors, including the island of Bali which is famous for its tourist attractions, especially the Ubud area. In addition to having an impact on the tourism sector, it also has an impact on the social and economic sectors in the form of a reduction or closure of several art shops (small shops), money changers, restaurants, home stays, villas, hotels and companies engaged in other tourism sectors. Due to the closure of these places, many employees are laid off and laid off, so many people are unemployed and looking for new jobs. This study aims to find out how big the impact of employee layoffs as the impact of Covid-19 on people's livelihoods in Ubud village. The data analysis technique used in this study is factor analysis in order to obtain new variables (factors) which are fewer in number than the initial variables.

Keywords: *Covid-19, livelihoods, factor analysis*

ABSTRACT ID: MATH-12

The effect of social media on the development of tourism destinations affected by Covid-19

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Abstract

The phenomenon of using social media in the development of tourism destinations, especially those affected by Covid-19, can be a means of restoring the tourism climate which is currently slumped. This study aims to determine the influence of social media on the development of tourism destinations affected by COVID-19. Tourists who visit tourism destinations become the population in this study and the samples taken are tourists who use social media. The analysis used is a binary logistic regression analysis of the interest in visiting tourist destinations The results of the study show that the length of use of social media and promotions have the opportunity to have an influence on visiting tourism destinations. This can be a consideration for tourism managers to further increase the popularity of tourism destinations by adding promotions on social media.

Keywords: *social media, tourism destinations, promotions*

ABSTRACT ID: MATH-13

Balinese Public Perception Post Vaccination in Preventing the Covid-19 Pandemic

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Abstract

The success of the vaccination program in Indonesia, especially in Bali, should be followed by a decrease in Covid-19 cases. Therefore, the government continues to urge the public to be orderly and disciplined to obey and implement health protocols. This is important because the economic impact of Covid-19 is felt by the community, including the Balinese. In Bali, where most of its citizens depend on the tourism sector, the impact of the Covid-19 pandemic has been profound. Community discipline in implementing health protocols even though they have been vaccinated must be maintained. The purpose of this study is to find out the relationship between the characteristics of the Balinese people to knowledge about Covid-19 and perceptions about the risk of being exposed to Covid-19. This research was conducted in urban and rural areas in Bali Province with a total of 333 respondents who had received one vaccine. The results of the study obtained that there were 221 respondents from urban areas and 112 from rural areas, there was already awareness of respondents to stay at home and not work when sick, where 94.6 percent of respondents believed in the spread of Covid-19. Respondents' knowledge about how to spread Covid-19 mostly answered through objects that had been contaminated with Covid-19 and through direct contact. The use of masks when outside the home is the most frequently done activity and exercise is the least frequently done activity in preventing the spread of Covid-19. Respondents also thought that respondents were very worried and at risk of contracting the Covid-19 virus, and it was very important to always implement health protocols.

Keywords: *Covid-19 vaccine, Bali people, health protocol, Covid-19 pandemic*

ABSTRACT ID: MATH-14

Sensitivity analysis of COVID-19 spreading models with asymptomatic and symptomatic classes

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Abstract

This study analyzes the parameters that affect the COVID-19 spread model for asymptomatic and symptomatic classes. This type of analysis is called sensitivity analysis. The sensitivity analysis of R_0 gives the result that parameter b is the parameter with the highest index value. Furthermore, parameter $\boldsymbol{\gamma_V}$ has the greatest sensitivity index for $\boldsymbol{I_V}$, parameter $\boldsymbol{\mu_V}$ has the greatest sensitivity index among other parameters for E_H, and parameter r has the greatest sensitivity index for E_V value.

Keyword: *COVID-19, mathematical model, sensitivity analysis*

Oral Presentation Abstracts
PHARMACY

Analytical Pharmacy, Bio-pharmacy, Technology Pharmacy, Clinical Pharmacy, etc.

ABSTRACT ID: PHARM-01

Determination of standard parameters of Galing-galing (*Cayratia trifolia* (L.) Domin) leaf extract as a candidate for sunscreen raw materials

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Abstract

Exposure to Ultraviolet (UV) rays for a certain period can cause health problems, especially for skin. For this reason, sunscreen is often used to protect the skin barrier. Galing-galing (*Cayratia trifolia* (L) Domin) is a plant that has been reported to contain flavonoids, therefore it is beneficial to be developed as a sunscreen's active compound . In order to maintain the quality of the end product, raw materials must be standardized to meet the specified standard parameters. This study aims to determine the standard parameters of galing-galing leaf extract (GGLE) and to obtain information regarding the potential this extract as a sunscreen. The research was conducted through an experimental study with the following stages of research: preparing extracts using several extraction methods, analyzing standard parameters of the extract, determining total flavonoid content, in vitro antioxidant and sunscreen activity tests by spectrofotometry method. The results showed that the GGLE prepared by the ultrasound assisted extraction method met the standardized extract parameters with total flavonoid content of 41.82 ± 0.01 mgQE/g extract. Meanwhile, the determination of antioxidant activity resulted IC_{50} value on 66.523 ± 0.449 ppm of concentration. The obtained SPF value is of 5.65 (moderate protection) at 250 ppm. It can be concluded that GGLE can be used as a sunscreen's active compound.

Keywords: *antioxidant, flavonoid, galing-galing, sunscreen*

ABSTRACT ID: PHARM-02

Antioxidant activity test of ethanol extract of soursop leaves (*Annona muricata* L.) using DPPH method (*1,1-diphenyl-2-picrylhidrazyl*) and edible film formulation

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Abstract

Soursop (*Annona muricata* L.) is one of the plants that have the potential to treat canker sores, especially the leaves. The use of soursop leaves as a medicine for canker sores is still limited and there is no scientific data to support this. Soursop leaves contain flavonoid compounds that has antioxidant activity The purpose of this study was to determine the antioxidant activity of soursop leaf extract and to make edible film formulations. The research method included sample preparation, extraction by maceration method, phytochemical screening, antioxidant test of extract by DPPH method (*2,2-diphenyl-1-picrylhydrazil*), edible film formulation and evaluation. Soursop leaf extract was made in 3 edible film formulations with various concentrations of extract of which Formula I, II and III contained 2.5, 5%, and 7.5% of extract. The evaluated parameters were organoleptic, thickness test, pH, and folding power. The results of the observations showed that the organoleptic results of the soursop leaf extract edible film were in the form of a thin layer of solid, greenish color, and a characteristic odor of soursop leaves. Edible film preparations from soursop leaf extracts met the standard requirements for thickness and surface pH. Soursop leaf extract edible film has a folding power of more than 300 folds. The antioxidant activity of soursop leaves extract expressed in IC_{50} value which was 55.104 ppm with strong antioxidant category.

Keywords: Annona muricata *L., flavonoid, edible film, antioxidant*

ABSTRACT ID: PHARM-03

Efficacy of bajakah tampala (*Spatholobus littoralis* Hassk.) ethanol extract, a typical plant of Kalimantan Island (Borneo), against *Streptococcus pyogenes* biofilm

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Abstract

Biofilms are responsible for a large medical burden throughout the world. According to the US National Institute of Health, biofilms responsible for over 80% of microbial infections in the human body. An estimated 17 million new biofilm infections arise annually in the United States, which result in as many as 550,000 fatalities each year and cause an ever-growing economic burden, due to chronic infections and longer hospital stays. This research aimed at finding out antibiofilm activity of bajakah tampala extract against *Streptococcus pyogenes*. The inhibition and eradication activities toward *S. pyogenes* biofilm were tested *using microtiter broth* method by measuring the *minimum biofilm inhibition concentration* ($MBIC_{50}$) and *minimum biofilm eradication concentration* ($MBEC_{50}$). The *S. pyogenes* biofilm structure in front of and absence of the extracts was analysed using *Scanning Electron Microscopy* (SEM). At concentration of 1% w/v bajakah tampala extract showed activity against *S. pyogenes* mid-phase biofilm formation and maturation phase (80.11 % ± 0.01, 72.10% ± 0.01) and was able to eradicate the biofilm of *S. pyogenes* 70.20% ± 0.01. The biofilm structure analysis by SEM provided evidence that bajakah tampala ethanol extract disturbed the *extracellular polymeric substance* (EPS) matrix of the *S. pyogenes* biofilm. The result obtained clearly indicate that bajakah tampala exthanol extract can developed as a new antibiofilm candidate for the treatment of *S. pyogenes* biofilm infection.

***Keyword**: Biofilm, Borneo plant, infection, Streptococcus pyogenes, Spatholobus littoralis Hassk,*

ABSTRACT ID: PHARM-04

Mangrove-Derived fungi as a reservoir of promising secondary metabolites for anticancer agents

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Abstract

Cancer is the leading cause of death worldwide, accounting for nearly 10 million deaths in 2020. Currently, cancer treatment still relies on chemotherapy, however, most anticancer drugs showed non-specific toxicity to normal cell proliferation resulting in various side effects, and are ineffective against many forms of cancer. In addition, the increasing case of chemoresistance of cancer cells to chemotherapy has boosted the discovery of new anticancer agents. Natural products are known as the origin of several clinically used anticancer agents, *e.g.* taxol and vincristine. Among natural products, mangrove-derived fungi are of particular scientific interest evidenced by the increasing rate of publications on cytotoxic secondary metabolites reported from these microorganisms. In this review, we summarize cytotoxic secondary metabolites produced by mangrove-derived fungi as well as their mode of action. Data were collected from original research articles published on scientific-based sources such as Google scholar, PubMed, Taylor and Francis, Elsevier, and MDPI, in the range of 2000-2022. Approximately 95 cytotoxic secondary metabolites with IC_{50} values of <100 μM have been reported from 22 genera of mangrove-associated fungi. Among them, *Aspergillus* and *Penicillium* were the most frequent producers of cytotoxic metabolites reported from the mangrove ecosystem, suggesting their enormous potential as a source of pharmacophores in the search for anticancer candidates.

Keywords: *Anticancer, cancer cells, cytotoxic, mangrove-derived fungi, secondary metabolites*

ABSTRACT ID: PHARM-05

Endophytic fungi and their secondary metabolites with acetylcholinesterase inhibitory activity

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Abstract

Acetylcholinesterase inhibitors (AChEIs) are substances that act by increasing acetylcholine levels in the brain to prevent neurotransmitter degradation. AChEIs are the most widely used agents for Alzheimer's disease (AD) therapy. Currently, rivastigmine, donepezil, galantamine, and tacrine are four AChEIs available on market for the treatment of AD. Moreover, a naturally occurring alkaloid, huperzine A (HupA), originally isolated from Chinese herbs *Huperzia serrata* has been approved in China for AD treatment in 1994. As *H. serrata* is considered as a rare plant species and the high demand for HupA, many scientific efforts have been directed to find an alternative source for producing HupA. Recently, various species of endophytic fungi associated with *H. serrata* are reported to produce HupA, suggesting these microorganisms as potential sources of HupA as well as other AChEIs. This review aimed to summarize the evidence of HupA produced by various endophytic fungi as well as other potential AChEIs derived from endophytic fungi. Data search was conducted through scientific based-websites, such as Google Scholar, Science Direct, and Pubmed, which involved scientific publications during 2000-2022. Nineteen fungal genera including *Aspergillus*, *Cladosporium*, *Colletotrichum*, *Daldinia*, *Nigrospora*, *Penicillium*, *Rhizopycnis*, and *Xylaria* are reported to produce 60 secondary metabolites with AChEI activity. These compounds belong to the group of alkaloids, polyketides, steroids, and terpenoids. Further research on molecular mechanisms of secondary metabolites from endophytic fungi with AChEI activity can provide new insight into the development of more potent AChEIs for AD treatment, as well as highlight the capacity of these microorganisms as a source of originally plant-derived natural products of particular interest.

Keywords: *Acetylcholinesterase inhibitors (AChEIs), alzheimer's disease, endophytic fungi, huperzine A (HupA), secondary metabolites*

ABSTRACT ID: PHARM-06

Combination effect of *Centella asiatica* L. leaf and clove oil as antibacterial

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Abstract

Combining two antibacterial agents can be implemented in order to enhance their effectiveness. Native to Indonesian, *Centella asiatica* leaves and clove oil are both widely used and have been found to have antimicrobial activities. The aim of this study was to examine the antibacterial activity of the combination of clove oil and *C. asiatica* leaf extract on both gram-positive and gram-negative bacteria. The samples those were used are clove oil and macerated *C. asiatica* extract. The microdilution method was used to conduct the antibacterial activity test. The combination effect was determined using checkerboard microdilution and the FICI value. The result showed that *Staphylococcus aureus*, *Streptococcus mutans,* and *Eschericia coli* bacteria could not grow when treated to *C. asiatica* leaf extract or clove oil. Otherwise, *Pseudomonas aeruginosa* keep on growing even though each sample have been introduced. Furthermore, a distinct result was obtained when the combination was applied, a synergistic effect has been found on *S. aureus* bacteria. This research can be used as a basis for future investigations into the potential of the two compounds as traditional medicine.

Keywords*: ,* Centella asiatica L, *microbiology, microdilution checkerboard, antibacterial, traditional medicine clove oil*

ABSTRACT ID: PHARM-07

Antibacterial activity of Bali kele honey extract from *Trigona laeviceps* against *Escherichia coli* and *Pseudomonas aeruginosa*

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Abstract

One of the by-products of the Balinese kele bee, which is frequently employed in the treatment of pyogenic infection, is honey. These infections can be brought on by a variety of bacteria, including *Escherichia coli* and *Pseudomonas aeruginosa*. The purpose of this study was to determine the antibacterial activity of Balinese kele honey extract from *Trigona laeviceps* against *E. coli* and *P. aeruginosa*. Balinese kele honey was extracted by liquid-liquid extraction method using increased polarity solvents such as n-hexane, ethyl acetate, and 96% ethanol, consecutively. The chemical content of n-hexane, ethyl acetate, and 96% ethanol extract was qualitatively assessed. The antibacterial activities of the three extracts were tested using the microdilution method against *E. coli* ATCC 8739 and *P. aeruginosa* ATCC 9027. Based on the results of phytochemical screening, the n-hexane extract contains steroids/triterpenoids. Saponins, flavonoids, phenols, tannins, and steroids/triterpenoids were present in ethyl acetate extract. Ethanol extract contains saponins, flavonoids, phenols, and tannins. The three extracts showed antibacterial activity with MIC and MBC values of more than 1,500 ppm against *E. coli*. For *P. aeruginosa*, ethyl acetate extract and ethanol extract revealed MIC and MBC values > 1,500 ppm, while n-hexane extract showed MIC and MBC values of 62.5 ppm. These results demonstrated that only the n-hexane extract of Bali kele honey was able to provide strong inhibition against *P. aeruginosa* bacteria.

***Keywords**: Antibacterial, Balinese kele honey, Escherichia coli, Extract,* Pseudomonas aeruginosa

ABSTRACT ID: PHARM-08

Optimization of $MgCl_2$ concentration on amplification of *ori* and *bla* fragments for recombinant vaccine expression vector construction using PCR method

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Abstract

Increasing the production capacity of recombinant vaccines can be done by constructing expression vectors that have high transcription efficiency, namely plasmids carrying ori with low-medium copy numbers. Plasmid construction was carried out by amplification of the *ori* fragment and the *bla* gene from the pBR322 plasmid which had a low-medium copy number using the PCR (Polymerase Chain Reaction) method. $MgCl_2$ is one of the PCR components that determines the yield (amount of product) and the specificity of the PCR reaction. If the concentration of MgCl2 is low, it will reduce the yield of the PCR product, while in high amounts it will decrease the specificity which is indicated by the formation of non-specific PCR products. This study aims to optimize the concentration of $MgCl_2$ in the range of 0.5-2 mM. The original fragment of the pBR322 plasmid was amplified with the primers pair Fori and Rori which carried a specific restriction site. The bla gene of the pBR322 plasmid was amplified with the primers pair Fbla and Rbla which carried a specific restriction site. Variations in the concentration of $MgCl_2$ used were 0.6 mM, 1 mM, 1.5 mM and 2 mM. The PCR product from the optimization of the original fragment and the bla gene was analyzed by electrophoresis method. Electrophoresis results showed that the optimum concentration of $MgCl_2$ was 1 mM under PCR conditions at annealing temperature of 58°C. This optimal concentration is characterized by a high yield of PCR products without the formation of nonspecific DNA bands. The original fragments and the bla gene were amplified and purified in large quantities with the optimal concentration of $MgCl_2$. Research has been able to provide large amounts of original fragments as a base material to form new plasmids for the production of recombinant vaccines.

Keywords: *bla, $MgCl_2$, ori, pBR322, recombinant vaccines*

ABSTRACT ID: PHARM-09

Application of quality by design approach to the development and evaluation ethanolic extract of noni fruit seeds (*Morinda citrifolia* L.) hydrogel

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Abstract

The use of hydrogels as a delivery system for active ingredients in industry is increasing. This study aims to develop a topical antioxidant preparation using a quality by design approach. Quality target product profile for ethanolic extract *Morinda citrifolia* L hydrogel was defined and critical quality attributes were identified. The effects of critical parameters such as type and concentration of gelling agent were investigated by executing design of experimentation using Central Composite Design. The optimized formulation was evaluated for antioxidant activity by *in-vitro* model like free radical scavenging by DPPH method. It was observed that formulation variables X1: type and X2: gelling agent concentration showed significant effect on the response Y1: viscosity (Cp), Y2 : spreadability (cm) and Y3: adhesion (g/s). The Formulation comprising 50% carbopol fulfils the criteria of quality target product profile. *In-vitro* antioxidant screening revealed that the developed of ethanolic extract *Morinda citrifolia* L hydrogel showed antioxidant activity. This study confirmed that quality by design is an effective approach for understanding the quality parameters for optimizing herbal topical dosage forms.

Keywords: *ethanolic extract, hydrogel,* Morinda citrifolia *L., Quality by Design (QbD)*

ABSTRACT ID: PHARM-10

Preparation and characterization of daluga starch *(Cyrtosperma merkusii*) fully gelatinized as pharmaceutical excipient

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Abstract

Daluga starch is widely used as an excipient in pharmaceutical formulations because it is inert and it can be mixed with drugs without any chemical reactions. This research was aimed to develop and characterize the physical and chemical properties of daluga starch fully gelatinized (DSFG) as a pharmaceutical excipient. Organoleptic properties, pH, ash content, shrink drying, macroscopic and microscopic analyses, amylose and amylopectin content, bulk and tapped density, angle of repose and flow rate were physically evaluated for daluga starch. Fourier transform infrared spectroscopy (FT-IR), scanning electron microscopy (SEM), energy-dispersive x-ray spectroscopy (EDS), and differential scanning calorimetry (DSC) were used to characterize and evaluate the chemical properties of the DSFG. The results of this study indicate that DSFG affects organoleptic properties, pH, ash content, shrink drying, macroscopic and microscopic analyses, amylose and amylopectin content, bulk and tapped density, angle of repose and flow rate. In conclusion, DSFG as a method has a good starch profile and is acceptable that can be developed as a pharmaceutical excipient.

Keywords: *Amylose, amylopectin, chemical properties, Daluga starch fully gelatinized, physical properties.*

ABSTRACT ID: PHARM-11

Biosynthesis, characterization of gold nanoparticles using ascorbic acid and their biological activities

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Abstract

Three factors must be considered in developing a drug delivery system to produce new drugs with ideal properties. These include building an effective method, preventing harmful effects on the applied approach, and good system acceptance by patients. Nanotechnology is the science and technology used to design and manipulate particles with a size range of 1-100 nm. The study aimed to determine the concentration of ascorbic acid, the characterization of gold nanoparticles, and the inhibition of tyrosinase enzyme activity. The manufacture of 6 gold nanoparticle formulas was synthesized by the green synthesis method using ascorbic acid. The gold nanoparticles were characterized using Particle Size Analyzer (particle size, polydispersity index, zeta potential) and tyrosinase enzyme inhibition tests. The results showed a change of color from clear to dark brown with a Z-Average was 254.9 nm; PDI was 0.352; zeta potential was -15.8 mV (F1), and the IC_{50} value for inhibiting the tyrosinase enzyme of gold nanoparticles was 42.48 ppm. The conclusion obtained from this study is that the best concentration of ascorbic acid that can be used as a bioreduction in manufacturing gold nanoparticles is 2 mM. The gold nanoparticles produced are included in the nanoparticle category because they have a Z-Average of 254.9 nm. Gold nanoparticles with a concentration of ascorbic acid 2 mM can inhibit tyrosinase enzyme inhibition.

Keywords: *Green Synthesis; Gold Nanoparticles; Particle Size; Tyrosinase Enzyme*

ABSTRACT ID: PHARM-12

Determination of Calcium Oxalate in porang flour

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Abstract

Porang tubers have various benefits that are useful for humans. However, porang has the disadvantage that it has a high oxalate content, which can cause irritation and itching. The purpose of this study was to analyze the oxalate content in porang tubers. The porang tubers used in this study were from the Tabanan area of Bali. Porang tubers are washed, then thinly sliced and dried. After drying, the porang is processed into porang flour. Porang tubers are also made using various concentrations of ethanol. The method used in determining calcium oxalate levels is the titration method using KMNO4 as a titrant. Determination of calcium oxalate levels in porang flour was carried out using permanganometric titration. Variations in the concentration of the ethanol solvent used were 40%, 50%, 60%, 70%, and 80%. Heating is required in sample preparation. The formation of pink color indicates the end point of the titration. The results showed that the lower the concentration of ethanol used, the lower the concentration of calcium oxalate.

Keywords: *calcium oxalate, porang, tubers, titration*

ABSTRACT ID: PHARM-13

Effective fractionation method of betacyanin from red dragon fruit using macroporous AB-8 resin for pharmaceutical purposes

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Abstract

The red color produced by red dragon fruit can be used as a substitute for synthetic dyes such as amaranth, carmoisine, and allura red which have been banned in several European countries. The vibrant reddish-purple color of the dragon fruit is caused by the presence of betacyanin. Betacyanin pigment is hydrophilic, hence the extraction can be performed using aqueous organic solvents such as ethanol. This solvent is effective in withdrawing betacyanin from its matrix through extraction. Aqueous ethanol was also capable of eliminating unwanted pectin from the sample matrix. High-concentrated betacyanin extract can be obtained through fractionation using macroporous AB-8 resin adsorbent. The adsorption process of the crude extract was carried out by mixing the extract with AB-8 resin, then shaking it with a horizontal shaker. The desorption process of the betacyanin fraction was conducted by adding 70 mL of ethanol solvent to the resin. Variations of the ethanol concentrations were 50%; 60%; 70%; and 80%. Determination of betacyanin content was performed by UV-Vis spectrophotometry method with a measurement wavelength of 536 nm. The extract adsorption process resulted in the highest betacyanin adsorption by AB-8 resin, which was 54.91% and the highest betacyanin desorption ratio was 53.04% with 50% ethanol solvent.

Keywords: *adsorption, betacyanin, desorption, macroporous AB-8 resin, red dragon fruit.*

ABSTRACT ID: PHARM-14

Phytochemical fingerprint of fermented *Cascara* tea for product quality assurance purpose

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Abstract

Robusta coffee rind (*Coffea canephora*) has been processed as a functional herbal product *Cascara* with various pharmacological activities. The recently developed *cascara* tea is *cascara* tea with a prior fermentation process. To obtain fermented cascara tea with consistent quality, standardization of the finished product is the major concern in this recent research. The purpose of the performed analysis was to determine the class of compounds and the phytochemical *fingerprint* of fermented *cascara* tea compared to fresh ones using the TLC-spectrophotodensitometry method. The robusta coffee rind was fermented with *tapai* yeast (400:1 w/w) for 3 days at room temperature and the container was tightly closed. The samples were dried and extracted by maceration method using 96% ethanol as a solvent compared to 0.5% acetic acid (85:15 v/v). The fingerprint profile was identified with the stationary phase of the GF_{254} silica gel plate and the mobile phase mixture was conditioned according to the class of the tested compounds. Plates were observed visually with an ultraviolet-visible lamp and also with a spotting reagent. The phytochemical fingerprint of fermented *cascara* tea showed that the flavonoid gave 11 peaks, and tannin produced 11 peaks. The phenolic group was identified to give 10 peaks, saponin compound gave 9 peaks. Other groups namely terpenoid, alkaloid, and steroid gave 11, 10, and 11 peaks, respectively.

Keywords: *cascara tea,* Coffea canephora*, fermentation, phytochemical fingerprint, robusta coffee rind.*

ABSTRACT ID: PHARM-15

Developing an instrument for assessing the safety level of antiplatelet usage in outpatients with coronary heart disease

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Abstract

Cardiovascular disease is caused by impaired heart and blood vessel function, such as coronary heart disease, heart failure, hypertension, and stroke. Antiplatelet is one of the therapies used in the treatment of cardiovascular disease. Therapy with antiplatelet in outpatients with cardiovascular disease has a high risk of adverse drug reactions (ADR). ADR includes bleeding, melena, dyspepsia, and hypersensitivity reactions that may occur in the patients. It is necessary to create an instrument that can evaluate the safety of antiplatelet drugs used by outpatients. The study design used in this study was observational analytic. The instrument's preparation was carried out through Focus Group Discussions (FGDs) to be further validated in terms of content and face validation. The results of the FGDs were conducted twice with seven expert panelists. Each managed to get 15 questions in the instrument that was content valid with CVRs parameters > 0.99. At the same time, the face validation is declared valid with Cohen's kappa index (CKI) parameter of 0.815. This study has succeeded in developing a valid instrument to assess the safety of antiplatelet use in coronary heart patients undergoing outpatient therapy.

Keywords: *antiplatelet, coronary heart disease, drug monitoring instrument, medication safety*

ABSTRACT ID: PHARM-16

Correlation between community demographics to the use of health information and communication technology (e-health)

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Abstract

Using information and communication technologies to support health and healthcare is known as e-Health. Community is increasingly using digital tools to assist in making decisions about their health and medical care. This study aims to determine the correlation between community demographic data and the level of use of e-health and IT tools that is often used in e-health implementation. This study is an observational study using questionnaires conducted in the second and third trimesters of 2022 in the Denpasar municipality. A total of 100 respondents filled out the research questionnaire. The results showed that 65% of respondents have accessed e-health technology. Demographic data like age (r=0,889), gender (r=0,829), level of education (r=0,814), and profession (r=0,826) have a strong correlation with the preference for using e-health technology. Most of the respondents use mobile/web apps as IT tools to access e-health systems. This study shows that our community tends to actively use e-health technology by accessing it through the mobile/web app.

Keywords*: community, e-health, health technology, health information, IT tools.*

ABSTRACT ID: PHARM-17

Hedonic test of secang wood facemist products as face fresheners

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Abstract

Secang wood (*Caesalpinia sappan* L.) has phenolic content in the form of homoisoflavonoids, namely brazilin and brazilein, which have very high antioxidant activity and inhibit premature aging. Therefore, secang wood extract can be used as a raw material in making face mist. Face mist is a spray preparation that can be applied to the face to give a fresh effect. This study aims to conduct a hedonic test on face mist products to determine the level of preference for aroma, texture, and convenience of use in face mist products that use a variety of essential oils. The descriptive statistical analysis method is used to analyze data by describing the data that has been collected. The results showed that the face mist products with three essential oil mixtures had the highest mean score compared to those with two essential oil mixtures or none. The essential oils are jasmine fragrance oil, ylang-ylang essential oil, and sweet orange essential oil. From these results, it can be concluded that the secang wood face mist product using three essential oil mixtures is preferable to other formulations.

Keywords: *antioxidant, essential oil, face mist, hedonic test, secang wood*

Oral Presentation Abstracts
PHYSIC

Quantum Physics, Optics, Magnetism, Biophysics, Photonics, Instrumentation Physics, Sensors and Actuator, Biosensor, Electronics, Computational Physics, Geophysics, Medical Physics, Nuclear Physics, Materials Physics, Nanoscience and Nanotechnology, Imaging Physics, etc.

ABSTRACT ID: PHY-01

Investigation on the dielectric and microstructural properties of Geopolymer-Graphene Oxide (GO) Composites subjected to poling treatment

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Abstract

This research investigated on the dielectric and microstructural properties of geopolymer-Graphene Oxide (GO) Composites subjected to the poling treatment. Geopolymers was chosen as an alternative to reduce the use of PZT-based piezoelectric composite materials which contain toxic elements that are harmful to the environment and the human body. In addition, geopolymers are an environmentally friendly material and is commonly used to reduce CO_2 emissions as a compensation for the cement industry. Meanwhile, GO has abundant raw materials in Indonesia and is relatively easy to synthesize. Polling treatment is carried out to align the dipoles in the same direction, so that the geopolymer-Graphene Oxide (GO) composite leads to better piezoelectric properties by optimizing the duration and the suitable poling temperature, as well as the required poling voltage. The effect of poling treatment on the dielectric and microstructural properties of geopolymer-Graphene Oxide (GO) composites was investigated to determine the potential of geopolymer-Graphene Oxide (GO) composites as an environmentally friendly piezoelectric energy conversion.

Keywords: *Geopolymer, Graphene Oxide, piezoelectric, energy conversion, dielectric, microstructure*

ABSTRACT ID: PHY-02

The Effect of TiO_2 Film Immersion Duration In N719 Dye On Microstructure, Optical Properties and Photoanode Performance of Photosupercapacitors Based FTO/TiO_2/N719/Activated Carbon/Carbon Black

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Abstract

Photosupercapacitor (PSC) is an integrated harvesting (DSSC) and storing energy (supercapacitor) simultaneously. The increase of DSSC performance is studied through an effect of TiO_2 film immersion duration on the N719 dye which has not been investigated so far. Furthermore, the effect of stacking configuration on the performance of FSC was investigated. There are three steps of fabrication, the first is DSSC fabrication, secondly is supercapacitor fabrication and the last one is integration both devices as FSC. The DSSC fabricated by deposite TiO_2 paste form solaronix and then immersed into a dye solution with 7, 12, 17, 22 and 27 hours immersion duration. Meanwhile, supercapacitor fabricated by mixing AC, CB and SBR for 24 hours than deposited on the Al foil substrat and followed by heating process. The next step is integrated both devices as FSC in series and parallel configuration. The DSSC were characterized by XRD, UV-Vis, EIS and I-V. Beside, the supercapacitor performance was characterized by CD and the FSC performance was assessed through photoresponse. The results showed that the increase of immersion time was proportional to the absorbance and efficiency of DSSC. The increase on the absorbance caused more dye is abosorbed in the TiO_2 pores which affects to the photon capacity that contributes to the DSSC performance. DSSC efficiency reach saturation at 22h immersion time with 4,39% efficiency. The specific capacitance of supercapacitor is 61.35 F/g. The discharge time on the FSC is show an exponential in accordance with discharge characteristics of the supercapacitor. The discharge time in parallel configuration was 32.6 s. and the total efficiency was 3.19%.

Keywords: *Photosupercapacitor (PSC), DSSC, supercapacitor, series – paralel configuration*

ABSTRACT ID: PHY-03

Silver Nanowires (AgNWs) Post-Treatment Effect in Application of Transparent and Conductive Electrodes: A Mini Review

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Abstract

Due to the problems of Indium Tin Oxide (ITO) based electrodes, such as brittleness, inflexibility, and poisonous composition, silver nanowires (AgNWs) are now the primary option in Flexible, Conductive, and Transparent Electrodes (FTCE). AgNWs have number of benefits over other materials, such as reduced graphene oxide, carbon nanotubes, and conductive polymers, including excellent electrical conductivity, transmittance, flexibility, and low sheet resistance. Two fundamental synthesis techniques, seed-based growth and template-assisted could be used to produce AgNWs. The synthesized AgNWs are subsequently applied on flexible substrates (such as PET) using a variety of techniques, i.e. electrospinning, spray coating, spin coating, and doctor blade. The high aspect ratio (length-to-diameter ratio) of AgNWs serves as a measure of their morphology goodness. Optical and electrical capabilities of AgNWs were measured by transmittance value at a wavelength of 550 nm and low sheet resistance (<80 Ω/sq). Until now, AgNWs that have been produced are still considered inadequate as a flexible, conductive, and transparent electrode application. Therefore, there are numerous approaches to improving AgNW performance, including post-treatment methods like UV radiation, microwave, sonication, quenching, etc.

Keywords: *AgNWs, FTCE, ITO, PET*

ABSTRACT ID: PHY-04

Design of Air Pressure and Height Measuring Equipment based on Arduino Nano Using BME280 Sensor

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Abstract

This research has succeeded in designing air pressure and altitude measuring instruments based on Arduino nano using a BME280 sensor. The design of this tool uses the BME280 sensor as an input for the parameter values of air pressure and altitude. The measurement results are displayed on the organic light emitting diode (OLED), which has been processed by the Arduino Nano. Sending measurement results uses the HC-05 module. Calibrate air pressure parameters at the Center for Meteorology, Climatology and Geophysics Region III Denpasar uses the Vaisala PTB 330 digital barometer in the media pressure chamber while calibrating the altitude parameter using Google Earth for reference. The results of the calibration of the two parameters indicate that the design of the measuring instrument has a good level of accuracy, for air pressure of 99.99% and altitude of 99.98%. In addition, the test of the suitability of the OLED output data and the application shows that the data communication has been successful and is in accordance with the match level of 100%.

Keywords: *air pressure,altitude,Arduino nano,BME280 sensor,OLED,*

ABSTRACT ID: PHY-05

Core-shell Fe_3O_4/Ag Nanoparticles: Synthesis and Characterization of Their Structural, Optical, and Magnetic Properties

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Abstract

This study aims to synthesize Fe_3O_4/Ag nanoparticles and to characterize their crystal structure, optical properties, and magnetic properties. Fe_3O_4 nanoparticles were synthesized from iron sand using coprecipitation method at 75°C for 60 minutes. Meanwhile, Ag nanoparticles were synthesized using the green synthesis method with *Calotropic gigantea* extract as a reducing agent. The core shell structure of Fe_3O_4/Ag was synthesized by wet chemical method at room temperature. Fe_3O_4/Ag nanoparticles were characterized using X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), UV-Vis spectroscopy, transmission electron microscopy (TEM), and magnetometry (VSM). X-ray diffraction pattern shows Fe_3O_4/Ag nanoparticles have a cubic crystal structure of FCC with an average crystal diameter of 20 nm. The TEM image shows the microstructure of Fe_3O_4/Ag nanoparticles. Fe_3O_4/Ag nanoparticles are spherical in which Fe_3O_4 is the core and Ag nanoparticles coat the surface of Fe_3O_4 and the shell. The Fe_3O_4/Ag FTIR spectra showed the presence of vibrations of functional groups such as Fe-O, O-H, C=C, and C-Ag which indicated the formation of Fe_3O_4/Ag nanoparticles. The UV-Vis spectrum of Fe_3O_4/Ag nanoparticles shows the absorption peak of ultraviolet waves at a wavelength of 245 nm. The Fe_3O_4/Ag hysteresis loop describes the soft magnetic properties of these nanoparticles. Fe_3O_4/Ag nanoparticles even have superparamagnetic properties with very small coercivity values even close to zero. Based on these results, Fe_3O_4/Ag nanoparticles have the potential to be applied in the field of magnetic and optical biosensors because they have superior magnetic and optical properties.

Keywords: *Core-shell, Fe_3O_4/Ag, magnetic, optical, structural*

ABSTRACT ID: PHY-06

Study of the effect of Lanthanum and Cerium Doping combination on magnetic properties of M-Type Hexaferrite Oxide Permanent Magnets

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Abstract

A study has been carried out on the effect of combination of Lanthanum and Cerium dopingon the magnetic properties of M-Type hexaferrite permanent magnet oxide. The research was conducted using the wet mechanical milling method. The research materials used were Fe_2O_3,$BaCO_3$, La_2O_3, and CeO_2, all of which were of high purity 99.9%. This research also uses technical materials such as Ethanol and Nitrogen. Stoichiometric calculations were carried outto calculate the composition of the mixture of each ingredient. The combination of Lanthanumand Cerium substitution was varied with the composition of the doping ion concentration (x =0 – 0.5 and y = 0 – 0.1). Permagraph characterization was carried out to determine the magnetic properties of each test sample. Results based on the permagraph characterization, the properties of M-type hexaferrite permanent magnets increased with the increase in the dopingion concentration in the sample. The presence of doping ions that have a magnetic moment is strongly suspected to contribute to the interaction of the type and the total moment in the M- type hexaferrite structure.

Keywords: *M-type hexaferrite, magnetic properties, permgraph, Lanthanum*

ABSTRACT ID: PHY-07

Mapping of earthquake proposed areas based on the parameter b-value and *Peak Ground Acceleration* (PGA) in the Bali region

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Abstract

Bali is an area vulnerability to earthquake hazards. This thing caused Bali is flanked by two zone reason earthquakes, that is subduction zone next to south and zone Flores back arc thrust north . One effort for minimize damage or loss caused by earthquake that is with analyze vulnerability something region to earthquake . On study this is the earthquake parameter that is used as indicator danger that is level b-value and Peak Ground Acceleration (PGA), then results from these two parameters made reference for mapping area dangerous as effort for mitigation disaster earthquake. For the b-value calculation with Maximum Likelihood method . Whereas calculation results PGA with use two empirical method, that is method MV Mickey and. Lin Wu's empiricist . Based on results b-value calculation with Maximum Likelihood method is obtained score level b-value for the area of Bali , namely ranged from 0.370 to 1.419. Whereas results calculation PGA with use two empirical method, that is method MV Mickey empirical method and Lin Wu's empiricism is known that method Mickey's MV empirical more suitable used in the Bali region compared to method Lin Wu's empiricist , that is with PGA values ranged from 517.32-828.58 gal. So that based on results analysis both earthquake parameters the so obtained vulnerable areas of Bali to earthquake is part of Jembrana Regency.

Keywords: *b-value, PGA, Maximum Likelihood, MV Mickey, Lin Wu, Bali*

ABSTRACT ID: PHY-08

Application of hydroponic plants watering automations based on ATMEGA328 microcontroller on water water spinach (*Ipomea aquatic*a Forsk)

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Abstract

The development of electronic technology in the era of globalization is very rapid. Utilization of this technology as a means to assist in agriculture, especially hydroponic plantations that are currently developing, to obtain optimal results, it is necessary to monitor the humidity and temperature conditions of the growing media. In previous research, a system was made that was able to maintain the humidity and temperature of the water in accordance with what the plant needed. The tool made consists of a temperature sensor, humidity sensor, ATMega328 microcontroller, ADC and water pump. Temperature and humidity sensors function to detect temperature and humidity. The ADC functions to change the amount of voltage measured by temperature and soil moisture into a digital quantity which is then forwarded to the ATMega328 microcontroller to be processed into a digital display on the LCD. The ATMega328 microcontroller also regulates the ON and OFF of the water pump engine. The next research is to apply the tools that have been made in real terms. This research willapply the tools that have been made to the water spinach plant (*Ipomea aquatica* Forsk).

Keywords: *Humidity, temperature, water spinach.*

ABSTRACT ID: PHY-09

Analysis of slice thickness variation on contrast resolution of CT scan device imagery at Bali Mandara Hospital

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Abstract

Research on the analysis of variations in slice thickness on the contrast of CT Scan device images at the Bali Mandara Hospital, aims to determine the effect of using slice thickness on the CNR (contrast to noise ratio) value. The research was conducted experimentally by varying the thickness of the slices (1 mm, 2 mm, 3 mm, 4 mm, 6 mm and 8 mm), exposure factor 80 kV, 100mAs, using a phantom containing 6 objects. The results of the data used to determine the CNR value in the ROI area for 6 material objects contained in Phantom. Furthermore, the effect of slice thickness on the CNR value was analyzed for each object material. The results showed that the highest CNR value in air ROI was 34.54 and the lowest CNR value was at nylon ROI at 0.86. Slice thickness variations have an effect on CNR. With CNR it will produce optimal image quality.

Keywords: *CT scan, slice thickness, CNR, ROI, image quality.*

ABSTRACT ID: PHY-10

Anode heel effect application with stepwedge and variation of X- Ray tube voltage to contrast to noise ratio in computed radiography

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Abstract

This researched on the application of Anode Heel Effect with Stepwedge and Variation of X-Ray Tube Voltage on Contrast to Noise Ratio in Computed Radiography Image. The objectused is a stepwedge with a thickness of 1.5 mm for each step and variations in the voltage of the X-ray tube, at 40 kV, 50 kV, 60 kV, 70 kV, 80 kV, and 90 kV. The resulting image from X-ray irradiation will be processed using Computed Radiography (CR). SPSS IMB *Statistics* 26 is used to analyzed normal distribution, Pearson correlation test, and simple regression test. The test results indicate that the variation of the X-ray tube voltage affects the CNR value,where the greater the variation of the X-ray tube voltage, the lower the CNR value. At 40 kV X-ray tube voltage, the optimal CNR value is 71,113 at a stepwedge thickness of 27.0 mm. Meanwhile, in other X-ray tube voltage variations, the optimal CNR value has not been obtained. This shows that the optimal image is produced with a 40 kV X-ray tube voltage on objects with the same thickness variation as the stepwedge.

Keywords: *Anode Heel Effect, Contrast to Noise Ratio, Stepwedge, X-ray tube voltage*

ABSTRACT ID: PHY-11

Performance test of single heating dryer for chilli commodity processing

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Abstract

The main objective of this study was to test the performance of the single-heating chili dryer with liquefied petroleum gas. The dryer is made from metal (90%) and wood (10%) with length, width, and height of 60, 50, and 120 cm respectively and consists of 6 shelf slots. The performance test of the dryer was carried out in stages using ripe red chilies. The results of the first experiment of the test, for temperature variations with a fixed initial weight of 3 kg, the average results of drying duration at 70°C, 85°C, and 100°C were respectively 14.2 ± 0.29; 9.3 ± 0.25; and 6.5 ± 0.25 hours. The results of the second experiment of the test, used constant temperature 85°C, for chili weights 1, 2, 3, 4, 5, and 6 kg, the average drying duration was 6.1 ± 0.14; 8.6 ± 0.14; 9.3 ± 0.25; 9.3 ± 0.25; 11.8 ± 0.25; and 14.2 ± 0.29 hours. The most effective and efficient drying of chili is at 4 kg chili weight with a duration of 9.3 ± 0.25 hours and at that duration, the amount of gas consumed is about 0.82 kg.

Keywords: *chili dryer, liquefied gas, performance test, drying duration, amount of gas*

ABSTRACT ID: PHY-12

Quantum teleportation of entangled four-qubit via GHZ-like states

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Abstract

We propose a quantum teleportation protocol to transmit an entangled four-qubit statesvia a dual three-cubit GHZ-Like state channel. The measurement of Alice's projection and Bob's unitary transformation is carried out in two stages and involves two additional Bob particles. Theprobability and fidelity of the protocol reaches one

Keywords: *fidelity, projected measurement, quantum teleportation.*

ABSTRACT ID: PHY-13

Analysis of the effectiveness of the diagnostic laboratory wall on exposure rate of X-ray radiantion

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Abstract

Research has been carried out on the analysis of the effectiveness at ATRO Bali diagnostic laboratory wall as a barrier to radiation exposure rates, both primary and secondaryradiation in preventing and minimizing radiation hazards, for radiation workers, staff, and the public inside and outside laboratory. The radiation safety program in the use of X-ray aircraft has been regulated in Bapeten Regulation No. 8 of 2011 concerning the quality assurance of building designs that must meet the requirements for dose limiting for radiation workers is 0.57 mR per hour and for the general public at 0.03 mR per hour. From the results of measurements and calculations of radiation exposure rates on one primary wall, two scattered secondary walls, and one leaky secondary wall, the values obtained are 1.166 × 10-7 mR/hour; 1.668 × 10-7 mR/hour; 2,237 × 10-7 mR/hour; and 7.839 × 10-8 mR/hour. When compared with Bapeten Perka, the wall is quite effective in restraining rate of exposure to primary radiation and secondary radiation so that it is declared quite safe. This is also reinforced by the statistical test of one sample t test for all walls, which shows the results are still safe according to Bapeten's NBD.

Keywords: *radiation, radiation protection, wall effectiveness, X-ray.*

ABSTRACT ID: PHY-14

Relocation of the Seririt earthquake 14 November 2019 using double difference method

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Abstract

The relocation of the Seririt aftershock on November 14, 2019 using the Double Difference method to determine the results of the earthquake distribution according to the straightness of the Seririt fault.A total of 174 aftershocks were relocated at coordinates 113,478 – 115,181 oE and 7,894 – 8,357 oLS,and data from 85 BMKG seismic stations scattered around the study area. The results of the relocationshow that the distribution of the earthquake epicenters formed is more concentrated and moves to the northwest of the main earthquake, while the distribution of the hypocenters is more concentrated and is at a depth of 6-25 km which is spread in all directions and does not have a tendency to a certain direction. This earthquake occurred due to the combination of an upward fault with a horizontal fault which is dominantly moving towards the Northwest. It states that the cause of the Seririt aftershock is in accordance with the straightness of the Seririt fault. Judging from the RMS value, relocation using the Double Difference method showed a good increase in quality with an RMS value of 0.001-0.006, because the smaller the RMS value or close to zero, the closer the calculation results to the actual value.

Keywords: *earthquake, relocation, fault, Double Difference, RMS*

ABSTRACT ID: PHY-15

A critical review on the characteristics of leachate and their effect on ground water quality in Antang, Makassar, Indonesia

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Abstract

The aim of this study was to determine to investigate leachate seepage in the Antang landfill area, Makassar into subsurface rocks with geoelectric resistivity. The results of geoelectrical data provide information about the distribution of groundwater/aquifers in the Antang landfill area, Makassar. To determine the condition and the quality of underground water in the landfill area, several tests have been carried out, such as the content of heavy metals (lead, copper, mercury), Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). In addition, testing for nitrate (NO_3) and Sulfate (SO_4) contamination, as well as the content of E.Coli bacteria, was also carried out. Examination of heavy metal content in groundwater samples in the Antang TPA Makassar area was done to describe the effects of several types of heavy metals that generally contaminate water, such as lead, copper, mercury, cadmium, and chromium and their effects on health if consumed or enter the human body. Heavy metals can block the work of enzymes so that the body's metabolism is disrupted, causing cancer and mutations. Measurements of BOD, COD, nitrate and sulfate levels are needed as parameters in wastewater quality standards or as water pollution parameters. Meanwhile, the determination of E. Coli level in water samples in the Antnag TPA area is very important because if humans are exposed to these bacteria, they can experience health problems such as abdominal pain, diarrhea, nausea, and vomiting.

Keywords: *Geoelectric methods, Wenner configuration, leachate, ground water, heavy metal*

ABSTRACT ID: PHY-16

The natural iron sand magnetite crystal from Lokapaksa Beach

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Abstract

The Magnetite crystals are synthesized from iron sand fine powder with 37% hydrochloric acid solvent. Lokapaksa Beach's natural sand was extracted and separated by the magnetic separation method. The iron sand was ground with a mortar for 15 hours, then washed with ion-free water, and dried on a hotplate at 80 ℃. The eighty grams of fine powder of pure iron sand was dissolved in 200 mL of HCl while stirring with a magnetic stirrer at 100 ℃ at 600 rpm for 30 minutes. The filtrate was dried using a hot plate at 100 ℃ to form a crust, then it was ground in a mortar until it becomes a fine powder of pure iron sand, and it was calcined at 300, 400, 450, and 500 ℃ for 30 minutes respectively. It was found that Lokapaksa Beach's fine powder of pure iron sand consists mostly of 84.26% magnetite crystals with a grain size of (6,629±1,536) μm, it has a tetrahedral structure with an average lattice parameter of $a \approx b$ = (4.62 ± 0, 41) Å, and c = (6.05±1.55) Å, and it was classified as ferromagnetic materials with remanent and saturation magnetization values of 9.6672 and 45.3491 emu/gr. The coercive and saturation magnetic field strength are 0.0242 and 0.2938 T.

Keywords: *ferromagnetic, magnetite, natural iron sand, Lokapaksa Beach*

ABSTRACT ID: PHY-17

Investigation on ground water potential and lithology aquiver properties of Karst Maros-Pangkep, South Sulawesi, Indonesia

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Abstract

The aim of this wok was to investigate ground water potential and lithology aquiver properties of karst Maros-Pangkep, South Sulawesi. The ground water potential was investigated using geoelectric method with Wenner configuration. The lithology aquiver of the specimens taken from Karst Maros Pangkep area was quantified using SEM-EDS and XRD (X-Ray Diffraction) tests. Experimental results show that geoelectricity method with Wenner configuration can detect the presence of hydrological/groundwater resources potential in karst Maros Pangkep, South Sulawesi. The aquiver layer in the Maros-Pangkep karst area is quite shallow with varying depths of 0.75-15.7 m. The lithology of karst aquifer consists of sand, limestone, basalt, andesite, granite, quartz, In addition, experimental tests on porosity, permeability and degree of saturation deduced that limestone soil, the largest constituent of the karst formation, has bigger potential to store aquiver. Similar trend was reported in clay rock/soil formation but the potential to store aquiver is lower than that of limestone soil. The SEM-EDS and XRD tests results showed that the specimens consist of high amount of Calcium atom about 16 % with molar oxide CaO of 33.61 ± 1.67 wt.% which are the main compound of the limestone, the largest constituent of the karst Maros Pangkep formation.

Keywords: *Geoelectric methods, Wenner configuration, ground water, lithology, porosity*

ABSTRACT ID: PHY-18

The effectiveness of chitosan concentration from windu shrimp skin (*Penaeus monodon*) as a natural preservative in kenyar fish (*Sarda orientalis*)

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Abstract

A research has been carried out on the effectiveness of the concentration of chitosan from the skin of tiger prawns (*Penaeus monodon*) as a natural preservative in kenyar fish (*Sarda orientalis*). Chitosan is used in the form of a solution with concentrations of 1%, 1.5%, 2%, and 2.5%. Chitosan activity as fish preservative was analyzed through pH test, organoleptic test, and antimicrobial test using Total Plate Count (TPC) method. Chitosan solution was analyzed using UV-Vis. Each of about 500 g of kenyar fish was immersed in each of these chitosan solutions with immersion times of 20, 40, and 60 minutes. The soaked fish samples are called A1, A2, A3, and A4 respectively. Storage is carried out at room temperature. As controls were fish soaked in 2% acetic acid (A02) and fish that were not treated (A01). In the pH and organoleptic tests, observations were made in the range of 0, 24, 48, and 72 hours. While the antimicrobial test was carried out on the shelf life of kenyar fish for 24 hours. The results showed that the concentration of chitosan that provided benefits as the best antimicrobial material for a 24 hours shelf life was 2.5% chitosan solution with 40 minutes of immersion. The quality parameters of kenyar fish were obtained, namely pH 5, organoleptic value 9, and the total number of microbes 1.2×10^5 cfu/g.

Keywords: *chitosan solution, kenyar fish, antimicrobial, preservatives*

ABSTRACT ID: PHY-19

Total suspended solid (TSS) modeling of the suwung river estuary using Sentinel-2A

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Abstract

Research has been carried out on modeling the concentration of Total Suspended Solid (TSS)laboratory test results with Sentinel-2A image data at the Suwung estuary dam, Denpasar city.The method used is the correlation method of laboratory measurements (in situ) with the measurement results of the Sentinel-2A image pixels resulting from the application of the TSS algorithm. Measurement in the laboratory for the concentration of TSS using the Gravimetricmethod by taking a total of 30 samples. There is a difference in the value of the TSSconcentration measurement results from laboratory measurements with the pixel value of the processed Sentinel-2A image that applies the TSS algorithm released by Laili. The mathematical model produced in this study is y=1.0213x – 0.2921 where the variable y represents TSS as measured by laboratory measurements, while the variable x represents TSS as measured in Sentinel-2A image pixels. The resulting correlation coefficient (R) is 0.996 TSSwhich indicates that there is a very strong correlation between the results of laboratory TSS measurements and the image pixels.

Keywords: *modeling, total suspended solid, Sentinel-2A, Suwung estuary*

ABSTRACT ID: PHY-20

Identification of geothermal rocks in Angseri Village and surroundings with gravity method

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Abstract

The research has been done on 2D model of the subsurface structure of the hot springs in Angseri Village and its surroundings using the gravity method. The purposes were to determine the distribution of gravity anomaly values, density values and subsurface rock structures. The results showed that the comprehensive value of Bouguer anomaly was between 10-137 mGal, the regional anomaly was between 42-105 mGal, and the residual anomaly was between (-32)-(35) mGal. The modeling results showed that the subsurface structure of the study area was composed of lava rock (1.1-1.73 gr/cm^3), tuff (1.61-2.52 gr/cm^3), tuff breccia (2.51-2,79 gr/cm^3), lava (2.8-2.89 gr/cm^3) and volcanic breccia (2.9-3.2 gr/cm^3), where volcanic breccia rocks as permeable rocks and tuff breccia rocks as cover rocks.

Keywords: *Angseri village, gravity anomaly, bourger anomaly, residual anomaly*

ABSTRACT ID: PHY-21

Estimated effective dose of head organs from computed tomography scanner (C.T. Scan.)

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Abstract

Research has been carried out on Estimating the Effective Dose of the Head Organs from Computed Tomography Scanner (C.T. Scan.) Radiation. This study aims to determine the effective dose received by patients due to C.T. irradiation. Scan and then analyzed whether the absorbed dose has the potential to cause cancer. This cancer potential will be analyzed based on the threshold set by BAPETEN. C.T. Scans. The brand used is SIEMENS Somatom with type M-CT-160. Data were taken from several patients who underwent C.T. irradiation. Scans. The effective dose was determined using an equation quoted from the journal Ibrahim et al in 2018 with a DLP and a conversion coefficient (k) of 0.0021 mSv/mGy.cm. These results are then analyzed and a conclusion is obtained from the CT plane. The scan used is still feasible to use, judging from the estimated effective dose analyzed for each risk organ. However, as a material for suggestions and discussions, it is very important to carry out routine monitoring of the utilization of C.T.Scans.

Keywords: *Effective Dose, CT.Scan, DLP, CTDIvol.*

ABSTRACT ID: PHY-22

Application of automatic yarn winder to increase productivity in traditional cagcag weaving business

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Abstract

Weaving is a craft product in the form of cloth made from threads such as cotton, silk, and so on by inserting the weft transversely into the warp. Before the weaving process, the thread winding process is usually carried out. One of the weaving craftsmen from Jembrana Regency is still doing the process of winding threads manually. The process of winding threads with manual tools takes quite a long time and the results of the thread rolls are not neat. Therefore, an innovation in the form of an automatic thread winder was proposed. An automatic Yarn Winder is a tool that can help weavers by providing convenience in the yarn winding process through the technology offered, namely the use of DC motors, keypads, and LCDs. The results of the yarn roll will later be used as a basis or motif on woven products. By providing these solutions and conveniences, cag cag weaving craftsmen can carry out the yarn winding process more quickly and neatly and can increase their income from weaving craftsmen.

Keywords: *Cagcag Weaving, Automatic Yarn Winder*

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