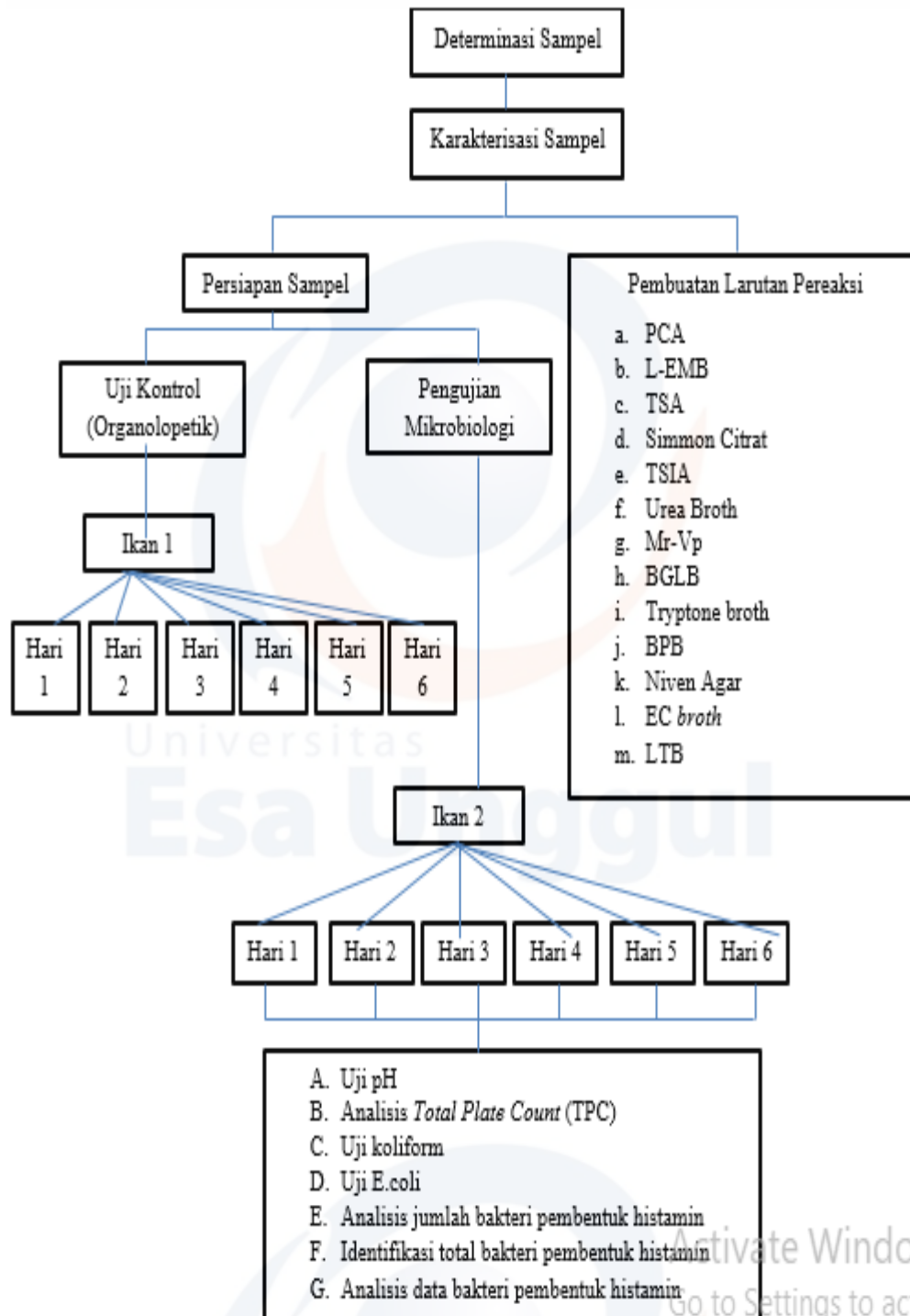


LAMPIRAN

Lampiran 1. Prosedur Kerja



Lampiran 2. Surat Determinasi Sampel



DIREKTORAT PENGELOLAAN LABORATORIUM, FASILITAS RISET, DAN KAWASAN SAINS TEKNOLOGI

Gedung B.J. Habibie Jalan M.H. Thamrin Nomor 8,
Jakarta Pusat 10340

Telepon/WA: 0811 8612 392; E-mail: dit-plfrkst@brin.go.id
www.brin.go.id

No. ID ELSA : 39357

Transaction

Number

Metode : Identifikasi secara morfologi

Method

Nama : Laboratorium Oseanografi - BRIN

Laboratorium

Name of Laboratory

Alamat : Jl. Pasir Putih 1, Ancol Timur (Gedung Pusat Riset Oseanografi- BRIN)

Laboratorium

Laboratory Address : Jakarta - Indonesia 11048

Email : layan@lipi.go.id; Telp +62 811-1391-617

Kondisi Pengukuran/Parameter Pengujian *Measurement Conditions/Testing Parameters:*
Identifikasi dengan menggunakan karakter morfologi

Hasil Pengujian *Testing Results :*

1. *Katsurwonus pelamis* Kishinouye, 1915
2. *Pampus argenteus* (Euphrasen, 1788)
3. *Lutjanus malabaricus* (Bloch & Schneider, 1801)
4. *Thunnus tonggol* (Bleeker, 1851)

<https://data.lipi.go.id/privateurl.xhtml?token=c583d53c-b2be-4533-bd89-d19ccde31892>

Catatan *Note:*

Daftar sampel yang dilakukan pengujian terdapat di lembar pengesahan.

Penamaan sampel sesuai dengan penamaan pada saat permohonan pengajuan layanan.

Terima kasih sudah melakukan pengujian/ penyewaan alat/ proses riset dengan fasilitas yang tersedia di Laboratorium Oseanografi. Jika dikemudian hari, hasil pengujian atau analisis ini akan dipublikasikan, mohon kiranya bisa menambahkan dalam Ucapan Terima Kasih atau Acknowledgement di dalam publikasi Anda,

seperti dalam contoh format berikut:

Dalam bahasa Indonesia : "Penelitian ini didukung oleh fasilitas riset, dan dukungan ilmiah serta teknis dari Laboratorium Oseanografi di Badan Riset dan Inovasi Nasional".

Dalam bahasa Inggris : "The authors acknowledge the facilities, and the scientific and technical assistance of the Oceanography Laboratories at the National Research and Innovation Agency

Kingdom : Animalia
Phylum : Chordata
Class : Actinopterygii
Ordo : Scombriformes
Family : Scombridae
Genus : *Thunnus*
Spesies : *Thunnus tonggol* (Bleeker, 1851)
Nama lokal : Tuna ekor panjang atau Tongkol abu-abu

Metode identifikasi menggunakan karakter morfologi mengikuti sumber:



Carpenter, K.E. and Niem, V.H., 2001. *FAO Species Identification Guide for Fishery Purposes, The Living Marine Resources of the Western Central Pacific Vol. 5: Bony fishes part 3 (Menidae to Pomacentridae)*. Rome: FAO.

Carpenter, K.E. and Niem, V.H., 2001. *FAO Species Identification Guide for Fishery Purposes, The Living Marine Resources of the Western Central Pacific Vol. 6: Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals*. Rome: FAO.





White, W. T., Dharmadi, Last, P. R., Faizah, R., Chodrijah, U., Prisantoso, B. I., ... & SJ, M. B. 2013. *Market fishes of Indonesia*. Australian Centre for International Agricultural Research.

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Lampiran 3. Karakteristik Sampel

| No | Jenis | Gambar | Keterangan |
|----|---|--|--|
| 1 | Ikan Tongkol Abu-abu (<i>Thunnus tonggol</i>) segar |  | Ikan segar yang digunakan sebelum proses pemindangan |
| 2 | Ikan Tongkol Abu-abu (<i>Thunnus tonggol</i>) pindang |  | Ikan pindang yang digunakan sebagai sampel pengujian |





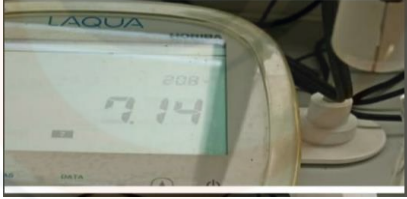
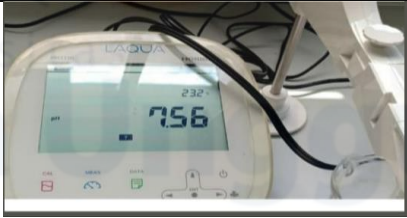
Lampiran 4. Persiapan Sampel

| No | Gambar | Keterangan |
|----|---|--|
| 1. |  | Pengukuran lebar ikan pindang |
| 2. |  | Pengukuran panjang ikan pindang |
| 3. |  | Mengambil seluruh bagian daging ikan |
| 4. |  | Penimbangan ikan yang akan digunakan sebagai sampel pengujian mikrobiologi dan pengujian pH, kemudian dimasukkan ke dalam plastik. |

Lampiran 5. Pengujian pH dan Organoleptik







a. Pengujian pH

| Pengujian | Hasil | Gambar |
|-----------|-------|--------|
|-----------|-------|--------|

| | | | |
|-----------|------|--|--|
| Hari ke 1 | 6,58 |  | |
| Hari ke 2 | 6,73 |  | |
| Hari ke 3 | 6,80 |  | |
| Hari ke 4 | 6,84 |  | |
| Hari ke 5 | 7,14 |  | |
| Hari ke 6 | 7,56 |  | |

b. Pengamatan Organoleptik

| Pengujian | Gambar | Keterangan |
|-----------|--------|------------|
|-----------|--------|------------|

| | | |
|-----------|---|---------------------------|
| Hari ke 1 |  | Kenampakan ikan hari ke 1 |
| Hari ke 2 |  | Kenampakan ikan hari ke 2 |
| Hari ke 3 |  | Kenampakan ikan hari ke 3 |
| Hari ke 4 |  | Kenampakan ikan hari ke 4 |
| Hari ke 5 |  | Kenampakan ikan hari ke 5 |
| Hari ke 6 |  | Kenampakan ikan hari ke 6 |

Lampiran 6. Analisis *Total Plate Count*

a. Hari ke 1

| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | 216 | 13 | 10 ⁻² B | TBUD | 23 | 10 ⁻² C | TBUD |
| 4 | 10 ⁻² A | 212 | 14 | 10 ⁻² B | TBUD | 24 | 10 ⁻² C | TBUD |
| 5 | 10 ⁻³ A | 90 | 15 | 10 ⁻³ B | 153 | 25 | 10 ⁻³ C | 175 |
| 6 | 10 ⁻³ A | 57 | 16 | 10 ⁻³ B | 140 | 26 | 10 ⁻³ C | 162 |
| 7 | 10 ⁻⁴ A | 52 | 17 | 10 ⁻⁴ B | 69 | 27 | 10 ⁻⁴ C | 68 |
| 8 | 10 ⁻⁴ A | 40 | 18 | 10 ⁻⁴ B | 55 | 28 | 10 ⁻⁴ C | 55 |
| 9 | 10 ⁻⁵ A | 25 | 19 | 10 ⁻⁵ B | 25 | 29 | 10 ⁻⁵ C | 26 |
| 10 | 10 ⁻⁵ A | 15 | 20 | 10 ⁻⁵ B | 17 | 30 | 10 ⁻⁵ C | 18 |

b. Hari ke 2

| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | TBUD | 13 | 10 ⁻² B | TBUD | 23 | 10 ⁻² C | TBUD |
| 4 | 10 ⁻² A | TBUD | 14 | 10 ⁻² B | TBUD | 24 | 10 ⁻² C | TBUD |
| 5 | 10 ⁻³ A | TBUD | 15 | 10 ⁻³ B | 83 | 25 | 10 ⁻³ C | 120 |
| 6 | 10 ⁻³ A | 220 | 16 | 10 ⁻³ B | 76 | 26 | 10 ⁻³ C | 88 |
| 7 | 10 ⁻⁴ A | 93 | 17 | 10 ⁻⁴ B | 60 | 27 | 10 ⁻⁴ C | 65 |
| 8 | 10 ⁻⁴ A | 85 | 18 | 10 ⁻⁴ B | 45 | 28 | 10 ⁻⁴ C | 42 |
| 9 | 10 ⁻⁵ A | 27 | 19 | 10 ⁻⁵ B | 25 | 29 | 10 ⁻⁵ C | 28 |
| 10 | 10 ⁻⁵ A | 10 | 20 | 10 ⁻⁵ B | 20 | 30 | 10 ⁻⁵ C | 18 |

c. Hari ke 3

| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | TBUD | 13 | 10 ⁻² B | TBUD | 23 | 10 ⁻² C | TBUD |
| 4 | 10 ⁻² A | TBUD | 14 | 10 ⁻² B | TBUD | 24 | 10 ⁻² C | TBUD |
| 5 | 10 ⁻³ A | TBUD | 15 | 10 ⁻³ B | 148 | 25 | 10 ⁻³ C | TBUD |
| 6 | 10 ⁻³ A | TBUD | 16 | 10 ⁻³ B | 117 | 26 | 10 ⁻³ C | 235 |
| 7 | 10 ⁻⁴ A | 80 | 17 | 10 ⁻⁴ B | 51 | 27 | 10 ⁻⁴ C | 90 |
| 8 | 10 ⁻⁴ A | 65 | 18 | 10 ⁻⁴ B | 43 | 28 | 10 ⁻⁴ C | 70 |
| 9 | 10 ⁻⁵ A | 62 | 19 | 10 ⁻⁵ B | 40 | 29 | 10 ⁻⁵ C | 54 |
| 10 | 10 ⁻⁵ A | 45 | 20 | 10 ⁻⁵ B | 29 | 30 | 10 ⁻⁵ C | 52 |

d. Hari ke 4

| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | TBUD | 13 | 10 ⁻² B | TBUD | 23 | 10 ⁻² C | TBUD |
| 4 | 10 ⁻² A | TBUD | 14 | 10 ⁻² B | TBUD | 24 | 10 ⁻² C | TBUD |
| 5 | 10 ⁻³ A | 96 | 15 | 10 ⁻³ B | 145 | 25 | 10 ⁻³ C | 52 |
| 6 | 10 ⁻³ A | 83 | 16 | 10 ⁻³ B | 130 | 26 | 10 ⁻³ C | 49 |
| 7 | 10 ⁻⁴ A | 77 | 17 | 10 ⁻⁴ B | 76 | 27 | 10 ⁻⁴ C | 36 |
| 8 | 10 ⁻⁴ A | 69 | 18 | 10 ⁻⁴ B | 69 | 28 | 10 ⁻⁴ C | 30 |
| 9 | 10 ⁻⁵ A | 72 | 19 | 10 ⁻⁵ B | 66 | 29 | 10 ⁻⁵ C | 16 |
| 10 | 10 ⁻⁵ A | 64 | 20 | 10 ⁻⁵ B | 56 | 30 | 10 ⁻⁵ C | 15 |

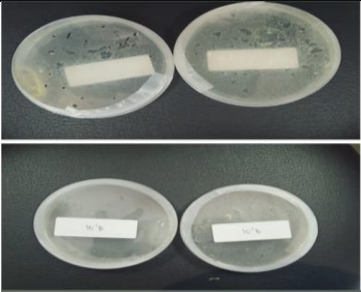
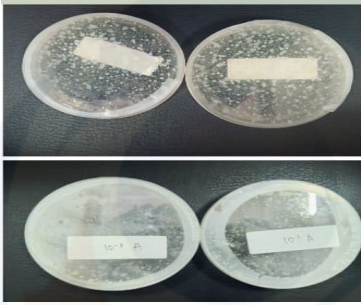
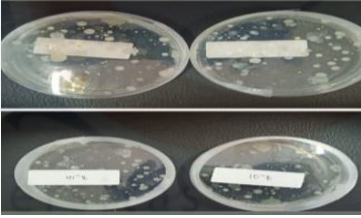
e. Hari ke 5

| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | 89 | 13 | 10 ⁻² B | 81 | 23 | 10 ⁻² C | 169 |
| 4 | 10 ⁻² A | 76 | 14 | 10 ⁻² B | 76 | 24 | 10 ⁻² C | 154 |
| 5 | 10 ⁻³ A | 65 | 15 | 10 ⁻³ B | 69 | 25 | 10 ⁻³ C | 139 |
| 6 | 10 ⁻³ A | 60 | 16 | 10 ⁻³ B | 63 | 26 | 10 ⁻³ C | 128 |
| 7 | 10 ⁻⁴ A | 55 | 17 | 10 ⁻⁴ B | 59 | 27 | 10 ⁻⁴ C | 122 |
| 8 | 10 ⁻⁴ A | 43 | 18 | 10 ⁻⁴ B | 58 | 28 | 10 ⁻⁴ C | 98 |
| 9 | 10 ⁻⁵ A | 39 | 19 | 10 ⁻⁵ B | 52 | 29 | 10 ⁻⁵ C | 49 |
| 10 | 10 ⁻⁵ A | 32 | 20 | 10 ⁻⁵ B | 51 | 30 | 10 ⁻⁵ C | 45 |

f. Hari ke 6


| No | Seri | Hasil Koloni | No | Seri | Hasil Koloni | No | Seri | Hasil koloni |
|----|--------------------|--------------|----|--------------------|--------------|----|--------------------|--------------|
| 1 | 10 ⁻¹ A | TBUD | 11 | 10 ⁻¹ B | TBUD | 21 | 10 ⁻¹ C | TBUD |
| 2 | 10 ⁻¹ A | TBUD | 12 | 10 ⁻¹ B | TBUD | 22 | 10 ⁻¹ C | TBUD |
| 3 | 10 ⁻² A | TBUD | 13 | 10 ⁻² B | TBUD | 23 | 10 ⁻² C | 97 |
| 4 | 10 ⁻² A | TBUD | 14 | 10 ⁻² B | TBUD | 24 | 10 ⁻² C | 86 |
| 5 | 10 ⁻³ A | 79 | 15 | 10 ⁻³ B | 71 | 25 | 10 ⁻³ C | 72 |
| 6 | 10 ⁻³ A | 68 | 16 | 10 ⁻³ B | 69 | 26 | 10 ⁻³ C | 63 |
| 7 | 10 ⁻⁴ A | 61 | 17 | 10 ⁻⁴ B | 63 | 27 | 10 ⁻⁴ C | 55 |
| 8 | 10 ⁻⁴ A | 57 | 18 | 10 ⁻⁴ B | 56 | 28 | 10 ⁻⁴ C | 49 |
| 9 | 10 ⁻⁵ A | 44 | 19 | 10 ⁻⁵ B | 48 | 29 | 10 ⁻⁵ C | 39 |

| | | | | | | | | |
|----|--------------------|----|----|--------------------|----|----|--------------------|----|
| 10 | 10 ⁻⁵ A | 17 | 20 | 10 ⁻⁵ B | 39 | 30 | 10 ⁻⁵ C | 31 |
|----|--------------------|----|----|--------------------|----|----|--------------------|----|

| Nama | Gambar | Keterangan |
|----------------|---|---|
| TPC TBUD |  | Hasil koloni yang melebihi batas dari 250 koloni |
| TPC 25-250 |  | Hasil koloni yang termasuk ke dalam range 25-250 koloni |
| TPC dibawah 25 |  | Hasil koloni dibawah range 25 |

Lampiran 7. Uji Koliform


A. Pendugaan

| Nama | Gambar | Keterangan |
|------------------|--|--|
| LTB <i>broth</i> |  | Hasil positif ditandai dengan betuknya gas dan kekeruhan |

| No | Pengujian | Seri | Hasil | | | No | Pengujian | Seri | Hasil | | |
|----|-----------|--------------------|-------|---|---|----|-----------|--------------------|-------|---|---|
| | | | 1 | 2 | 3 | | | | 1 | 2 | 3 |
| 1 | Hari ke 1 | 10 ⁻¹ A | + | + | + | 4 | Hari ke 4 | 10 ⁻¹ A | + | + | + |
| | | 10 ⁻² A | + | + | + | | | 10 ⁻² A | + | + | + |
| | | 10 ⁻³ A | + | + | + | | | 10 ⁻³ A | + | + | + |
| | | 10 ⁻¹ B | + | + | + | | | 10 ⁻¹ B | + | + | + |
| | | 10 ⁻² B | + | + | + | | | 10 ⁻² B | + | + | + |
| | | 10 ⁻³ B | + | + | + | | | 10 ⁻³ B | + | + | + |
| | | 10 ⁻¹ C | + | + | + | | | 10 ⁻¹ C | + | + | + |
| | | 10 ⁻² C | + | + | + | | | 10 ⁻² C | + | + | + |
| | | 10 ⁻³ C | + | + | + | | | 10 ⁻³ C | + | + | + |
| 2 | Hari ke 2 | 10 ⁻¹ A | + | + | + | 5 | Hari ke 5 | 10 ⁻¹ A | + | + | + |
| | | 10 ⁻² A | + | + | + | | | 10 ⁻² A | + | + | + |
| | | 10 ⁻³ A | + | + | + | | | 10 ⁻³ A | + | + | + |
| | | 10 ⁻¹ B | + | + | + | | | 10 ⁻¹ B | + | + | + |
| | | 10 ⁻² B | + | + | + | | | 10 ⁻² B | + | + | + |
| | | 10 ⁻³ B | + | + | + | | | 10 ⁻³ B | + | + | + |
| | | 10 ⁻¹ C | + | + | + | | | 10 ⁻¹ C | + | + | + |
| | | 10 ⁻² C | + | + | + | | | 10 ⁻² C | + | + | + |
| | | 10 ⁻³ C | + | + | + | | | 10 ⁻³ C | + | + | + |
| 3 | Hari ke 3 | 10 ⁻¹ A | + | + | + | 6 | Hari ke 6 | 10 ⁻¹ A | + | + | + |
| | | 10 ⁻² A | + | + | + | | | 10 ⁻² A | + | + | + |
| | | 10 ⁻³ A | + | + | + | | | 10 ⁻³ A | + | + | + |
| | | 10 ⁻¹ B | + | + | + | | | 10 ⁻¹ B | + | + | + |

| | | | | | | | | | | | |
|--|--|--------------------|---|---|---|--|--|--------------------|---|---|---|
| | | 10 ⁻² B | + | + | + | | | 10 ⁻² B | + | + | + |
| | | 10 ⁻³ B | + | + | + | | | 10 ⁻³ B | + | + | + |
| | | 10 ⁻¹ C | + | + | + | | | 10 ⁻¹ C | + | + | + |
| | | 10 ⁻² C | + | + | + | | | 10 ⁻² C | + | + | + |
| | | 10 ⁻³ C | + | + | + | | | 10 ⁻³ C | + | + | + |

B. Penegasan


| Nama | Gambar | Keterangan |
|------------|---|---|
| BGLB Broth |  | Hasil positif ditandai dengan terjadinya kekeruhan dan terbentuknya gas didalam tabung durham |

| No | Pengujian | Seri | Hasil | | | Jumlah tabung positif | Nilai APM/g |
|----|-----------|--------------------|-------|---|---|-----------------------|-------------|
| | | | 1 | 2 | 3 | | |
| 1 | Hari ke 1 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 2 | Hari ke 2 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 3 | Hari ke 3 | 10 ⁻¹ A | + | + | + | 3 | >1100 |

| | | | | | | | |
|--------------------|-----------|--------------------|-----------|--------------------|---|---|-------|
| | | 10 ⁻² A | + | + | + | 3 | >1100 |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| | | 4 | Hari ke 4 | 10 ⁻¹ A | + | + | |
| 10 ⁻² A | + | | | + | + | 3 | |
| 10 ⁻³ A | + | | | + | + | 3 | |
| 10 ⁻¹ B | + | | | + | + | 3 | |
| 10 ⁻² B | + | | | + | + | 3 | |
| 10 ⁻³ B | + | | | + | + | 3 | |
| 10 ⁻¹ C | + | | | + | + | 3 | |
| 10 ⁻² C | + | | | + | + | 3 | |
| 10 ⁻³ C | + | | | + | + | 3 | |
| 5 | Hari ke 5 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 6 | Hari ke 6 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |

Lampiran 8. Uji *Escherichia coli*

A. Pendugaan

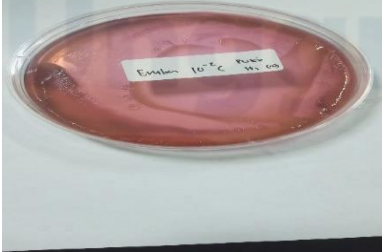
| Nama | Gambar | Keterangan |
|----------|--|---|
| EC broth |  | Hasil positif ditandai dengan terjadinya kekeruhan dan terbentuknya gas didalam tabung durham |

| No | Pengujian | Seri | Hasil | | | Jumlah tabung positif | Nilai APM/g |
|----|-----------|--------------------|-------|---|---|-----------------------|-------------|
| | | | 1 | 2 | 3 | | |
| 1 | Hari ke 1 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 2 | Hari ke 2 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 3 | Hari ke 3 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |

| | | | | | | | |
|---|-----------|--------------------|---|---|---|---|-------|
| 4 | Hari ke 4 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 5 | Hari ke 5 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |
| 6 | Hari ke 6 | 10 ⁻¹ A | + | + | + | 3 | >1100 |
| | | 10 ⁻² A | + | + | + | 3 | |
| | | 10 ⁻³ A | + | + | + | 3 | |
| | | 10 ⁻¹ B | + | + | + | 3 | >1100 |
| | | 10 ⁻² B | + | + | + | 3 | |
| | | 10 ⁻³ B | + | + | + | 3 | |
| | | 10 ⁻¹ C | + | + | + | 3 | >1100 |
| | | 10 ⁻² C | + | + | + | 3 | |
| | | 10 ⁻³ C | + | + | + | 3 | |

B. Penegasan

| Nama | Gambar | Keterangan |
|---------------|--|--|
| L-Emb Positif |  | Hasil positif ditandai dengan tumbuhnya koloni bewarna hijau metalik |

| | | |
|---------------|--|--|
| L-Emb Negatif |  | Hasil negatif ditandai dengan tidak terdapat koloni berwarna hijau metalik |
|---------------|--|--|

| No | Pengujian | Seri | Hasil | | | No | Pengujian | Seri | Hasil | | |
|----|-----------|--------------------|-------|---|---|----|-----------|--------------------|-------|---|---|
| | | | 1 | 2 | 3 | | | | 1 | 2 | 3 |
| 1 | Hari ke 1 | 10 ⁻¹ A | - | + | - | 4 | Hari ke 4 | 10 ⁻¹ A | + | + | - |
| | | 10 ⁻² A | - | - | - | | | 10 ⁻² A | - | - | - |
| | | 10 ⁻³ A | - | - | - | | | 10 ⁻³ A | - | - | - |
| | | 10 ⁻¹ B | - | - | - | | | 10 ⁻¹ B | + | + | + |
| | | 10 ⁻² B | - | - | + | | | 10 ⁻² B | + | + | - |
| | | 10 ⁻³ B | - | - | - | | | 10 ⁻³ B | + | + | + |
| | | 10 ⁻¹ C | - | - | - | | | 10 ⁻¹ C | + | + | - |
| | | 10 ⁻² C | - | - | - | | | 10 ⁻² C | + | - | - |
| | | 10 ⁻³ C | - | - | - | | | 10 ⁻³ C | - | - | - |
| 2 | Hari ke 2 | 10 ⁻¹ A | + | + | - | 5 | Hari ke 5 | 10 ⁻¹ A | + | - | - |
| | | 10 ⁻² A | - | - | + | | | 10 ⁻² A | + | - | - |
| | | 10 ⁻³ A | - | - | - | | | 10 ⁻³ A | + | - | - |
| | | 10 ⁻¹ B | - | - | - | | | 10 ⁻¹ B | + | - | - |
| | | 10 ⁻² B | - | - | - | | | 10 ⁻² B | - | - | - |
| | | 10 ⁻³ B | - | - | - | | | 10 ⁻³ B | - | - | - |
| | | 10 ⁻¹ C | + | + | + | | | 10 ⁻¹ C | - | - | - |
| | | 10 ⁻² C | + | - | + | | | 10 ⁻² C | - | - | - |
| | | 10 ⁻³ C | + | - | + | | | 10 ⁻³ C | - | + | + |
| 3 | Hari ke 3 | 10 ⁻¹ A | + | + | - | 6 | Hari ke 6 | 10 ⁻¹ A | + | + | - |
| | | 10 ⁻² A | + | + | + | | | 10 ⁻² A | + | + | + |
| | | 10 ⁻³ A | + | + | + | | | 10 ⁻³ A | + | + | + |
| | | 10 ⁻¹ B | + | + | + | | | 10 ⁻¹ B | + | + | + |
| | | 10 ⁻² B | + | + | + | | | 10 ⁻² B | + | + | + |
| | | 10 ⁻³ B | + | + | + | | | 10 ⁻³ B | + | + | + |
| | | 10 ⁻¹ C | + | + | - | | | 10 ⁻¹ C | + | + | + |
| | | 10 ⁻² C | + | - | - | | | 10 ⁻² C | + | + | + |
| | | 10 ⁻³ C | - | - | - | | | 10 ⁻³ C | + | + | + |



Lampiran 9. Analisis Jumlah Bakteri Pembentuk Histamin

a. Media Niven

| Seri | Gambar | Keterangan |
|-------------|---------------|-------------------|
|-------------|---------------|-------------------|

| | | |
|---|---|----------------------------------|
| A |  | Terdapat koloni putih |
| B |  | Terdapat koloni putih dan kuning |

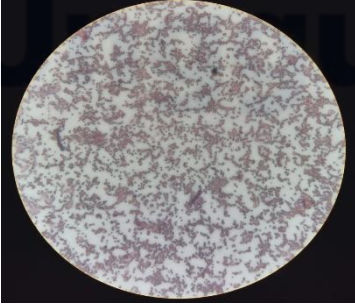
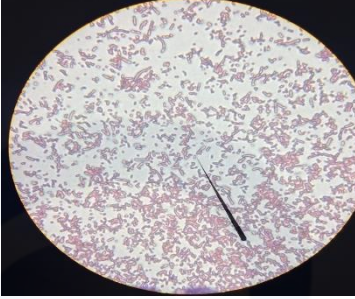
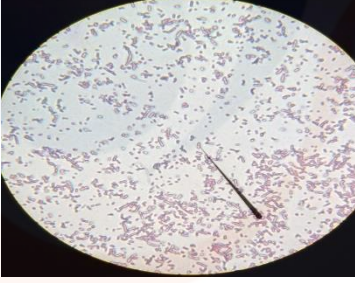
b. Tsa Miring

| Nama | Gambar | Keterangan |
|------------|--|---------------------|
| TSA miring |  | Hasil koloni putih |
| TSA miring |  | Hasil koloni kuning |


Lampiran 10. Identifikasi Total Bakteri Pembentuk Histamin


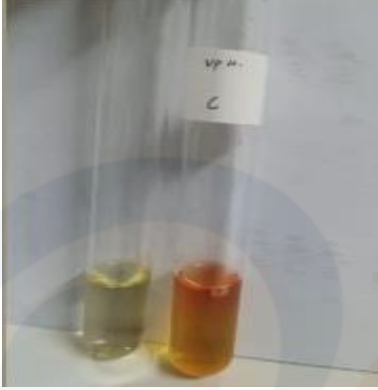

a. Pewarnaan Gram



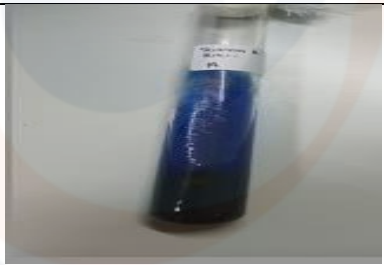
| Nama | Gambar | Keterangan |
|------|--------|------------|
|------|--------|------------|

| | | |
|------------------------|---|----------------------------------|
| Pewarnaan gram positif |  | Bakteri berbentuk staphylococcus |
| Pewarnaan gram negatif |  | Bakteri berbentuk batang |
| Pewarnaan gram negatif |  | Bakteri berbentuk batang pendek |

b. Uji Biokimiawi

| Nama | Gambar | Keterangan |
|-----------|--|--|
| Uji Indol |  | Hasil positif ditandai terdapat warna cincin merah |

| | | |
|----------|--|---|
| Uji MR |  | Hasil positif ditandai dengan warna merah |
| Uji Vp |  | Hasil positif ditandai dengan warna merah |
| Uji TSIA |  | <p>K/A (Alkalin/Asam)</p> <ul style="list-style-type: none"> • Asam dari glukosa <p>A/A (Asam/Asam)</p> <ul style="list-style-type: none"> • Asam dari glukosa, sukrosa • Asam dari glukosa, laktosa |

| | | |
|--------------------------|--|---|
| |  | <p>K/K (Alkalin/Alkalin)</p> <ul style="list-style-type: none"> • Tidak memfermentasi asam |
| <p>Uji Urease</p> |  | <p>Hasil positif ditandai perubahan warna ungu</p> |
| <p>Uji Simmon Citrat</p> |  | <p>Hasil positif ditandai dengan perubahan warna menjadi biru</p> |

Lampiran 11. Analisis Data Bakteri Pembentuk Histamin

Descriptives

Ulangan

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-----------|----|------------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Hari ke 1 | 3 | 1113000.00 | 539450.646 | 311451.976 | -227069.69 | 2453069.69 | 639000 | 1700000 |
| Hari ke 2 | 3 | 1340000.00 | 659393.661 | 380701.108 | -298024.66 | 2978024.66 | 920000 | 2100000 |
| Hari ke 3 | 3 | 1406666.67 | 616549.538 | 355965.042 | -124927.29 | 2938260.63 | 920000 | 2100000 |
| Hari ke 4 | 3 | 1516666.67 | 700594.985 | 404488.703 | -223707.76 | 3257041.09 | 950000 | 2300000 |
| Hari ke 5 | 3 | 1616666.67 | 797391.581 | 460374.244 | -364163.83 | 3597497.16 | 950000 | 2500000 |
| Hari ke 6 | 3 | 1830000.00 | 1044844.486 | 603241.245 | -765537.59 | 4425537.59 | 990000 | 3000000 |
| Total | 18 | 1470500.00 | 666578.467 | 157114.051 | 1139018.33 | 1801981.67 | 639000 | 3000000 |

ANOVA

Ulangan

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|------|------|
| Between Groups | 9.049E+11 | 5 | 1.810E+11 | .327 | .887 |
| Within Groups | 6.649E+12 | 12 | 5.541E+11 | | |
| Total | 7.554E+12 | 17 | | | |

Post Hoc Tests

Homogeneous Subsets

Ulangan


Duncan^a

| Perlakuan | N | Subset for alpha = 0.05 |
|-----------|---|----------------------------|
| | | 1 |
| Hari ke 1 | 3 | 1113000.00 |
| Hari ke 2 | 3 | 1340000.00 |
| Hari ke 3 | 3 | 1406666.67 |
| Hari ke 4 | 3 | 1516666.67 |
| Hari ke 5 | 3 | 1616666.67 |
| Hari ke 6 | 3 | 1830000.00 |
| Sig. | | .305 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 12. COA Bahan



Certificate of Analysis

1.08487.0000 Urea GR for analysis ACS,Reag. Ph Eur
 Batch K52291587

| | Spec. Values | Batch Values |
|--|----------------|----------------|
| Assay (ex N) | 99.0 - 100.5 % | 99.8 % |
| Assay (ex N, calc. on dried substance) | 99.0 - 101.5 % | 99.8 % |
| Purity (DSC (differential scanning calorimetry)) | ≥ 99.5 % | 100.0 % |
| Identity (IR-spectrum) | passes test | passes test |
| Appearance of solution (10 %; Wasser; color) | colourless | colourless |
| Appearance of solution (10 %; Wasser; clarity) | clear | clear |
| In water insoluble matter | ≤ 0.003 % | < 0.001 % |
| Acidity, Alkalinity | ≤ 0.0005 meq/g | < 0.0005 meq/g |
| Melting point (DSC) | 132 - 135 °C | 134 °C |
| NH ₄ (Ammonium) | ≤ 0.0500 % | < 0.0500 % |
| Chloride (Cl) | ≤ 0.0005 % | ≤ 0.0005 % |
| Sulfate (SO ₄) | ≤ 0.0001 % | ≤ 0.0001 % |
| Heavy metals (as Pb) | ≤ 0.0004 % | ≤ 0.0004 % |
| Biuret | ≤ 0.05 % | < 0.05 % |
| Sulfated ash (600 °C) | ≤ 0.005 % | ≤ 0.005 % |
| Cu (Copper) | ≤ 0.0001 % | ≤ 0.0001 % |
| Fe (Iron) | ≤ 0.0001 % | < 0.0001 % |
| Pb (Lead) | ≤ 0.0002 % | < 0.0001 % |
| Loss on Drying (105 °C) | ≤ 1.0 % | < 0.1 % |
| Corresponds to ACS, Reag. Ph Eur | passes test | passes test |
| Appearance of solution (10 %; Wasser; color) | colourless | colourless |
| Appearance of solution (10 %; Wasser; clarity) | clear | clear |
| Date of release (DD.MM.YYYY) 03.07.2020 | | |
| Minimum shelf life (DD.MM.YYYY) 28.02.2025 | | |
| Acidity, Alkalinity | ≤ 0.0005 meq/g | < 0.0005 meq/g |
| Melting point (DSC) | 132 - 135 °C | 134 °C |
| NH ₄ (Ammonium) | ≤ 0.0500 % | < 0.0500 % |
| Chloride (Cl) | ≤ 0.0005 % | ≤ 0.0005 % |
| Heavy metals (as Pb) | ≤ 0.0004 % | ≤ 0.0004 % |
| Biuret | ≤ 0.05 % | < 0.05 % |
| Sulfated ash (600 °C) | ≤ 0.005 % | ≤ 0.005 % |
| Cu (Copper) | ≤ 0.0001 % | < 0.0001 % |
| Fe (Iron) | ≤ 0.0001 % | < 0.0001 % |
| Pb (Lead) | ≤ 0.0002 % | < 0.0001 % |
| Loss on Drying (105 °C) | ≤ 1.0 % | < 0.1 % |
| Corresponds to ACS, Reag. Ph Eur | passes test | passes test |

Dr. Hans Henning Brewitz
 Responsible laboratory manager quality control

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 Date of release (DD.MM.YYYY) 03.07.2020
 Minimum shelf life (DD.MM.YYYY) 28.02.2025

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 EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
 400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000
 SALSA Version 972495 /990000747578/ Date: 03.07.2020

Page 1 of 1

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Certificate of Analysis

1.04350.0000 L-Histidine monohydrochloride monohydrate for biochemistry
Batch K52704750

| | Spec. Values | | Batch Values | |
|---|---|-----|--------------|-----|
| Assay (alkalimetric, calculated on dried substance) | 99.0 - 101.0 | % | 100.1 | % |
| Identity (IR-spectrum) | passes test | | passes test | |
| Identity (Chloride) | passes test | | passes test | |
| Appearance | white to almost white crystalline powder or colorless crystals | | passes test | |
| Appearance of solution (50 g/l CO ₂ -free water) | clear and not more intense in color than reference solution BY ₆ | | passes test | |
| Spec. rotation (α 20/D, 110 g/l, hydrochloric acid (120 g/l, calc. on dried substance)) | +9.2 to +10.6 | | +9.9 | |
| Sulfate (SO ₄) | ≤ 200 | ppm | ≤ 200 | ppm |
| Heavy metals (as Pb) | ≤ 10 | ppm | ≤ 10 | ppm |
| As (Arsenic) | ≤ 5 | ppm | ≤ 5 | ppm |
| Ca (Calcium) | ≤ 10 | ppm | ≤ 10 | ppm |
| Co (Cobalt) | ≤ 5 | ppm | ≤ 5 | ppm |
| Fe (Iron) (R-spectrum) | ≤ 5 | ppm | ≤ 5 | ppm |
| K (Potassium) (fl) | ≤ 5 | ppm | ≤ 5 | ppm |
| Mg (Magnesium) | ≤ 5 | ppm | ≤ 5 | ppm |
| Na (Sodium) | ≤ 50 | ppm | ≤ 50 | ppm |
| Zn (Zinc) | ≤ 5 | ppm | ≤ 5 | ppm |
| Ninhydrin-positive substances (LC) (any ninhydrin-positive impurity) | ≤ 0.2 and not more intense in color than reference solution BY ₆ | % | ≤ 0.2 | % |
| Ninhydrin-positive substances (LC) (ammonium (570 nm)) | ≤ 0.02 at reference solution BY ₆ | % | < 0.02 | % |
| Ninhydrin-positive substances (LC) (total impurities) | ≤ 0.5 | % | < 0.5 | % |
| Loss on drying (150 °C) | 7.0 - 10.0 | % | 8.6 | % |
| Heavy metals (as Pb) | ≤ 10 | ppm | ≤ 10 | ppm |
| As (Arsenic) | ≤ 5 | ppm | ≤ 5 | ppm |
| Ca (Calcium) | ≤ 10 | ppm | ≤ 10 | ppm |
| Co (Cobalt) | ≤ 5 | ppm | ≤ 5 | ppm |
| Fe (Iron) | ≤ 5 | ppm | ≤ 5 | ppm |
| K (Potassium) | ≤ 5 | ppm | ≤ 5 | ppm |
| Mg (Magnesium) | ≤ 5 | ppm | ≤ 5 | ppm |
| Zn (Zinc) | ≤ 5 | ppm | ≤ 5 | ppm |
| Ninhydrin-positive substances (LC) (any ninhydrin-positive impurity) | ≤ 0.2 | % | ≤ 0.2 | % |
| Ninhydrin-positive substances (LC) (ammonium (570 nm)) | ≤ 0.02 | % | ≤ 0.02 | % |
| Ninhydrin-positive substances (LC) (total impurities) | ≤ 0.5 | % | < 0.5 | % |

Minimum shelf life (DD.MM.YYYY) 26.02.2025

Dr. Michael Memmel

Responsible laboratory manager quality control

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EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000
SALSA Version 994895 / 99000772924/ Date: 11.05.2024

Certificate of Analysis

1.04873.1000 Potassium dihydrogen phosphate for analysis EMSURE® ISO
 Batch AM1605673

| | Spec. Values | | Batch Values | |
|---|--------------|---|--------------|---|
| Assay (alkalimetric, calculated on dried substance) | 99.5 - 100.5 | % | 99.9 | % |
| Assay (alkalimetric; dried substance) | ≥ 99.5 | % | 99.8 | % |
| pH-value (5. %; water) | 4.2 - 4.5 | | 4.3 | |
| Chloride (Cl) | ≤ 0.0005 | % | ≤ 0.0005 | % |
| Sulfate (SO ₄) | ≤ 0.003 | % | ≤ 0.003 | % |
| Total nitrogen (N) | ≤ 0.001 | % | ≤ 0.001 | % |
| Heavy metals (as Pb) | ≤ 0.0010 | % | ≤ 0.0010 | % |
| As (Arsenic) | ≤ 0.0002 | % | ≤ 0.0002 | % |
| Cu (Copper) | ≤ 0.0003 | % | ≤ 0.0003 | % |
| Fe (Iron) | ≤ 0.0010 | % | ≤ 0.0010 | % |
| Na (Sodium) | ≤ 0.02 | % | ≤ 0.02 | % |
| Pb (Lead) | ≤ 0.001 | % | ≤ 0.001 | % |
| Reducing substances | passes test | | passes test | |
| Loss on drying (110 °C) | ≤ 0.2 | % | < 0.1 | % |
| Loss on drying (130 °C) | ≤ 0.2 | % | < 0.1 | % |



Corresponds to ISO

Date of release (DD.MM.YYYY) 23.06.2020
 Minimum shelf life (DD.MM.YYYY) 30.06.2025

Claudia Wiegand
 Responsible laboratory manager quality control

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Lampiran 13. Kondisi di Industri Rumahan

| Gambar | Keterangan |
|---|------------------------------------|
|  | Proses penimbangan ikan |
|  | Proses pemasakan ikan pindang |
|  | Penyimpanan ikan yang sudah matang |
|  | Ikan yang sudah di potong kecil |