DAFTAR PUSTAKA

Abadi, H., Parhan, Winata, H. S., & Nidawah. (2022). Formulasi Sediaan Lip Cream dari Ekstrak Etanol Daun Bayam Merah (Amaranthus tricolor L.). *Majalah Farmasetika*, *7*(3), 106. https://doi.org/10.24198/mfarmasetika.v7i3.38429

Agustin, L., & Agustina, R. (2020). *Komparasi Unjuk Kerja Peralatan Spektrofotometer UV-Vis Pada Penentuan Total Phenolic Content*. *08*(1), 42–45.

Angraini, N., & Fitri Yanti. (2021). Penggunaan Spektrofotomer Uv-Vis untuk Analisis Nutrien Fosfat pada Sedimen dalam Rangka Pengembangan Modul Praktikum Oseanogafi Kimia. *Jurnal Penelitian Sains*, *23*(2), 78–83.

Bayu Arif Wibowo, & Saebani. (2016). *Pengaruh Rhodamine B Peroral Dosis Bertingkat Selama 12 Minggu Terhadap Gambaran Histopatologis Jantung Tikus Wistar*. *5*(2), 139–144.

Berliyanti, A. E., Pramushinta, I. A. K., & Purbosari, I. (2024). Analysis of Rhodamine B Content in Eyeshadow Cosmetic Preparations with UV-Vis Spectrophotometer and Butterfly Pea Flower (Clitoria ternatea L.) Extract. *Journal of Herbal, Clinical and Pharmaceutical Science (HERCLIPS)*, *6*(01), 40. https://doi.org/10.30587/herclips.v6i01.8212

BPOM RI. (2015). *Bpom Waspada Kosmetika Mengandung Bahan Berbahaya*. https://www.pom.go.id/siaran-pers/waspada-kosmetika-mengandung-bahan-berbahaya-oe-teliti-sebelum-memilih-kosmetika

BPOM RI. (2025). *BPOM Ungkap 23 Kosmetik Mengandung Bahan Berbahaya dan/atau Dilarang Periode Juli–September 2025*. https://www.pom.go.id/siaran-pers/bpom-tarik-34-kosmetik-mengandung-bahan-berbahaya-dan-atau-dilarang-konsumen-diminta-lebih-waspada

Buloto, A. V., Puluhulawa, F. U., & Mantali, A. R. Y. (2025). *Penguatan Regulasi dan Penegakan Hukum Terhadap Peredaran Kosmetik Ilegal di Indonesia dan Singapura*. *2*(2), 691–703.

Christina, O. D., & Putri, P. A. (2024). *Analysis of Rhodamine B in Lip Creams from Marketplace*. *12*(3), 190–197.

Elfasyari, T. Y., Putri, M. A., & Andayani, R. (2020). *Analisis Rhodamin B pada Lipstik Impor yang Beredar di Kota Batam secara Kromatografi Lapis Tipis dan Spektrofotometri UV-Vis*. *17*(01), 54–61.

EMA, I. Q. (n.d.). *ICH Q2(R2) Validasi prosedur analisis - Pedoman ilmiah*. https://www.ema.europa.eu/en/ich-q2r2-validation-analytical-procedures-scientific-guideline?utm_source

Fajri, N., Cahya, E. P., & Sriyati, S. (2024). *Validasi Metode Analisis Konsentrasi*

Larutan Kopi berdasarkan Spektroskopi Absorpsi Cahaya. *8*(1), 51–59.

Fajriani, N., Kurniawan, H., & Fajar Nugraha. (2022). *Identify the Rhodamin B on lipsticks in the market Using Thin Layer Chromatography (TLC) Method*. *4*, 671–678.

Fatma Latifah, R. I., & Tranggono, R. I. (2013). *Buku Pegangan Ilmu Pengetahuan Kosmetik*. Gramedia Pustaka Utama. https://books.google.co.id/books?id=Zg5hDwAAQBAJ

Fikri, E., & Firmansyah, Y. W. (2023). *A Short Communication : Contamination and Toxicity Pigment Red 53 , Rhodamine B , and Sudan III in Indonesian Cosmetics*. *VIII*(3), 6125–6131.

Ghiffari, H. D., Utami, R. T., Budiasih, S., Julianto, T., & Putri, R. M. (2024). Formulasi dan Uji Stabilitas Lip Cream Kombinasi Ekstrak Kulit Buah Terong Belanda (Solanum betaceum) dan Ekstrak Umbi Bit (Beta vulgaris L). *Jurnal Farmasi Higea*, *16*(2), 153–160.

Ghozali, I., & Kusumadewi, K. A. (2023). *Partial Least Squares Konsep, Teknik dan Aplikasi Menggunakan Program SmartPLS 4.0*.

Hainil, S., Budiasih, S., Ghiffari, H. D., Pratiwi, S. M., & Gusmali, M. (2025). *Formulasi dan Evaluasi Sediaan Masker Gel Peel-Off Ekstrak Etanol Daun Jambu Bol (Syzygium malaccence (L .) Merr . & Perry) untuk Perawatan Kulit Wajah*. *3*.

Hangin, H. M., Linden, S., & Leswana, N. F. (2022). *Analisis Kadar Rhodamin B Pada Liptint Yang Beredar di Pasar Segiri Kota Samarinda dengan Metode Spektrofotometri UV-Visible*. *7*(2), 95–111.

Haryati, H., & Guntarti, A. (2022). informative search of dyes content rhodamin b in blusher, lipstick, and eyeshadow cosmetics. *Journal of Halal Science and Research*, *3*(1), 20–28. https://doi.org/10.12928/jhsr.v3i1.6844

Hastika, F. Y., Maharatini, M. E., Qibtiyah, M., Andani, M., Rubina, M., Mufidah, & Noval, P. M. (2024). Sains Medisina. *Sains Medisina*, *2*(3), 93–98. https://wpcpublisher.com/jurnal/index.php/sainsmedisina/article/view/356

Helmalia, E., & Rahmawati, I. (2025). Analysis of Rhodamine B on Lip Tint Products Containing Natural Red Color Extracts Using UV-VIS Spectrophotometry. *Pharmaceutical Science and Clinical Pharmacy*, *3*(2), 68–73. https://doi.org/10.61329/pscp.v3i2.48

Hipi, D., Malaha, A., & Dunggio, T. (2022). *Analisis Kadar Zat Pewarna Rhodamin B Pada Pewarna Bibir Yang Beredar di Pasar Minggu Kabupaten Gorontalo*.

Imalia Putri Wulandari. (2024). *Analisis Kandungan Rhodamin B Pada Kosmetik Bibir Tidak Teregistrasi Bpom dengan Metode Klt dan Spektrofotometri (Skripsi)*.

K, N., Z, S. M., J, K., R, S., S., K. K., & LAKSHMI K. S. (2022). *Development and Validation of Stability Indicating Hptlc Method For The Simultaneous Estimation of Tinidazole and Fluconazole and Its Applicability in Marketed Dosage Form*. *14*(5).

Kashuri, M., Ikrar, T., & Indrayanto, G. (2025). Analysis of Trends in Cosmetics Supervision Cases in Indonesia in 2021-2024. *Eruditio : Indonesia Journal of Food and Drug Safety*, *5*(2), 128–139. https://doi.org/10.54384/eruditio.v5i2.235

Kementerian Kesehatan Republik Indonesia. (2020). *Farmakope Indonesia Edisi VI (VI)*. Kementerian Kesehatan Republik Indonesia.

Kurnia Puspita. (2024). *Senyum Menawan dengan Perawatan Bibir*. Victory Pustaka Media. https://bintangpusnas.perpusnas.go.id/konten/BK79843/senyum-menawan-dengan-perawatan-bibir/preview

Mawazi, S. M., Azreen Redzal, N. A. B., Othman, N., & Alolayan, S. O. (2022). Lipsticks History, Formulations, and Production: A Narrative Review. *Cosmetics*, *9*(1), 25. https://doi.org/10.3390/cosmetics9010025

Mayefis, D., Febriana, A., Ghiffari, H. D., & Utami, R. T. (2024). Formulasi Sediaan Blush On dari Ekstrak Bunga Kembang Sepatu (Hibiscus rosa-sinensis). *FASKES : Jurnal Farmasi, Kesehatan, Dan Sains*, *2*(2), 8–19. https://doi.org/10.32665/faskes.v2i2.3467

Meilyda, N. A., Febriani, A. K., & Balfas, R. F. (2024). *Uji Kualitatif Kandungan Hidrokuinon Pada Krim Pemutih Wajah dengan Metode Kromatografi Lapis Tipis (KLT)*. *7*(2), 276–288.

Munthe, H., Sartika Daulay, A., Ridwanto, R., & Munandar Nasution, H. (2025). Detection and Quantification of Rhodamine B in Loose Powder and Blush Cosmetic Products. *Indonesian Journal of Pharmaceutical Education*, *5*(2), 191–201. https://doi.org/10.37311/ijpe.v5i2.30832

Nafiq, U., Yuniarto, P. F., & Yuni Sulistyowati. (2020). *Analisis Kandungan Rhodamin B Pada Eyeshadow Yang Beredar di Daerah Kediri dan Nganjuk*. *1*(01).

Nanda, C. V., Kurniati, D. E., & Indriyanti, N. (2024). Pemanfaatan Pewarna Alami dari Bunga Asoka (Ixora coccinea) pada Formulasi Lip Cream. *Jurnal Mandala Pharmacon Indonesia*, *10*(1), 137–144. https://doi.org/10.35311/jmpi.v10i1.534

Nanda, E. V., & Darayani, A. E. (2018). Analisis Rhodamin B pada Lipstik yang Beredar Via Online Shop Menggunakan Metode Kromatografi Lapis Tipis (KLT) dan Spektrofotometri UV-Vis. *Sainstech Farma*, *11*(2), 17–20.

Nurhidayanti, N., Munir, M. A., Emelda, E., & Annisa Fatmawati. (2024). *Stannum : Jurnal Sains dan Terapan Kimia Analysis of Caffeine in Packaged*

Drinks Using Thin Layer Chromatography (TLC) and Spectrophotometry Method Analisis Kafein pada Minuman Kemasan Menggunakan Metode Kromatografi Lapis Tipis (KLT) dan Spektrofotom. *6*(1), 28–35. https://doi.org/10.33019/jstk.v6i1.4564

Pangestika, R. G. D., Leswana, N. F., & Agus, A. S. R. (2025). *Analisis Rhodamin B Pada Lipstik Impor Yang Beredar di Pasar Pagi Kota Samarinda dengan Metode Spektometri UV-Visible*. *11*(1), 1–11.

Peraturan Badan Pengawas Obat Dan Makanan Nomor 18 Tahun 2024 Tentang Penandaan, Promosi, Dan Iklan Kosmetik, Pub. L. No. 18 (2024). https://peraturan.bpk.go.id/Details/309969/peraturan-bpom-no-18-tahun-2024

Peraturan Badan Pengawas Obat Dan Makanan Nomor 25 Tahun 2025 Tentang Persyaratan Teknis Bahan Kosmetik, Pub. L. No. 25, 6 Fudma Journal of Manag2Ement Sciences (2025). https://peraturan.bpk.go.id/Details/333277/peraturan-bpom-no-25-tahun-2025

Ramandani, S., Setyowati, E., & Khudzaifi, M. (2025). Uji Rhodamin B Pada Lip Cream Yang Beredar di Toko Kosmetik Kota Kudus Menggunakan Kromatografi Lapis Tipis. *Nusantara Hasana Journal*, *1*(7), 132–137.

Riyanto. (2019). *Validasi & Verifikasi Metode Uji: Sesuai dengan ISO/IEC 17025 Laboratorium Pengujian dan Kalibrasi. Deepublish (CV Budi Utama)*.

Sugito, & Marliyana, S. D. (2021). *Uji Performa Spektrofotometer Serapan Atom Thermo Ice 3000 Terhadap Logam Pb Menggunakan CRM 500 dan CRM 697 di UPT Laboratorium Terpadu UNS*. *4*(2), 67–71.

Sugiyono. (2023). *Buku Metode Penelitian Kuantitatif,Kualitatif, dan R&D*.

Suharti, T. (2017). *Dasar Dasar Spektrofotometri UV-Vis dan Spektrofotometri Massa Untuk Penentuan Struktur Senyawa Organik*.

Sulastri, S., Riani, R., & Farikha, S. (2023). Review Artikel: Analisis Kandungan Rhodamin B Dalam Makanan Dan Minuman. *COMSERVA : Jurnal Penelitian Dan Pengabdian Masyarakat*, *2*(10), 2429–2435. https://doi.org/10.59141/comserva.v2i10.701

Supardi, R. H., Priyatmo, Y., Rerung, L. T., Sangkal, A., Hasibuan, F. E., Nasution, A. Y., Tasiam, E., Safitri, A. N., Faisal, M., Reynaldi, M. A., & Hilda Srivaliana Ilham. (2025). *BUKU KIMIA FARMASI*.

Tangkas, H. H., Putri, T. S., Aisyah, S. S., Hairunnisa, H., Oktavia, H., Purnamasari, I., Salbiah, S., & Rahmadani. (2022). Analisis Rhodamin B Dalam Lipstick di Kecamatan Banjarmasin Utara. *Journal Pharmaceutical Care and Sciences*, *2*(2), 85–91. https://doi.org/10.33859/jpcs.v2i2.190

Tatiana Siska Wardani. (2021). *Kosmetologi*. https://ebook.digilib-

unida.id/detail/kosmetologi/19393

Taupik, M., Adam Mustapa, M., & Sitti Gonibala, S. (2021). Analisis Kadar Rhodamin B Pada Blush-On Menggunakan Metode Spektrofotometri Uv-Vis. *Indonesian Journal of Pharmaceutical Education*, *1*(2), 119–126. https://doi.org/10.37311/ijpe.v1i2.10666

V. P. Borkar, V. P. B., Ingale Sakshi, I. S., Done Nikita, D. N., Somwanshi Rishikesh, S. R., & Watode Shubham, W. S. (2025). Herbal Lip Balm Using Natural Ingradients. *International Journal of Pharmaceutical Research and Applications*, *10*(3), 1156–1160. https://doi.org/10.35629/4494-100311561160

Vikandari, S. N., Asrinawangsih, E., Adlina, S., & Susanti. (2025). *Identifikasi Senyawa Rhodamin B Pada Lip Cream Yang Beredar di Kota Tasikmalaya*. *1*(Mei), 118–126.

Wulandari, L. (2011). *Buku Kromatografi Lapis Tipis*. PT. Taman Kampus Presindo, Jamber.

Yudono, B. (2017). *Buku Spektrofotometri UV-Vis*. SIMETRI.

Zurweni, & Sanova, A. (2023). *Development of UV-VIS Spectrophotometer Virtual Laboratory Media for Instrumental Analytical Chemistry Digital Practicum*. *13*(148), 89–100. https://doi.org/http://dx.doi.org/10.30998/formatif.v13i1.17069

LAMPIRAN

Lampiran 1. Surat Keterangan Kode Etik Penelitian

YAYASAN HARAPAN BUNDA BATAM
INSTITUT KESEHATAN MITRA BUNDA
KOMITE ETIK PENELITIAN
Jl. Seraya No 1 KOTA BATAM Telp/Fax (0778) 429431, website : http:\\ikmb.ac.id
SURAT KEPUTUSAN MENTERI PENDIDIKAN DAN KEBUDAYAAN REPUBLIK INDONESIA No. 284/M/2020

KOMITE ETIK PENELITIAN
INSTITUT KESEHATAN MITRA BUNDA
THE RESEARCH ETHICAL COMMITTEE INSTITUT KESEHATAN MITRA BUNDA

SURAT KETERANGAN
ETHICAL APPROVAL
No. 033/K/KEP/IKMB/IV/2026

Komite Etik Penelitian Institut Kesehatan Mitra Bunda, menyatakan dengan ini bahwa penelitian dengan judul :
The Research Ethical Committee of Institut Kesehatan Mitra Bunda states hereby that the following proposal :

"Analisis Rhodamin B Dalam Sediaan *Lip cream* yang Beredar di Pasar Jodoh Kota Batam Metode Kromatografi Lapis Tipis (KLT) & Spektrofotometri *UV-Vis*"
"Analysis of Rhodamine B in Lip cream Preparations Circulating in the Jodoh Market in Batam City Using Thin Layer Chromatograhy (TLC) and UV-Vis Spectrophotometry Methods"

Peneliti Utama : Theresia Adelia Putri Sinaga
Principal Investigato

Lokasi Penelitian : Laboratorium Kimia Farmasi
Research Location

Waktu Penelitian : April - Juli 2026
Time Schedule

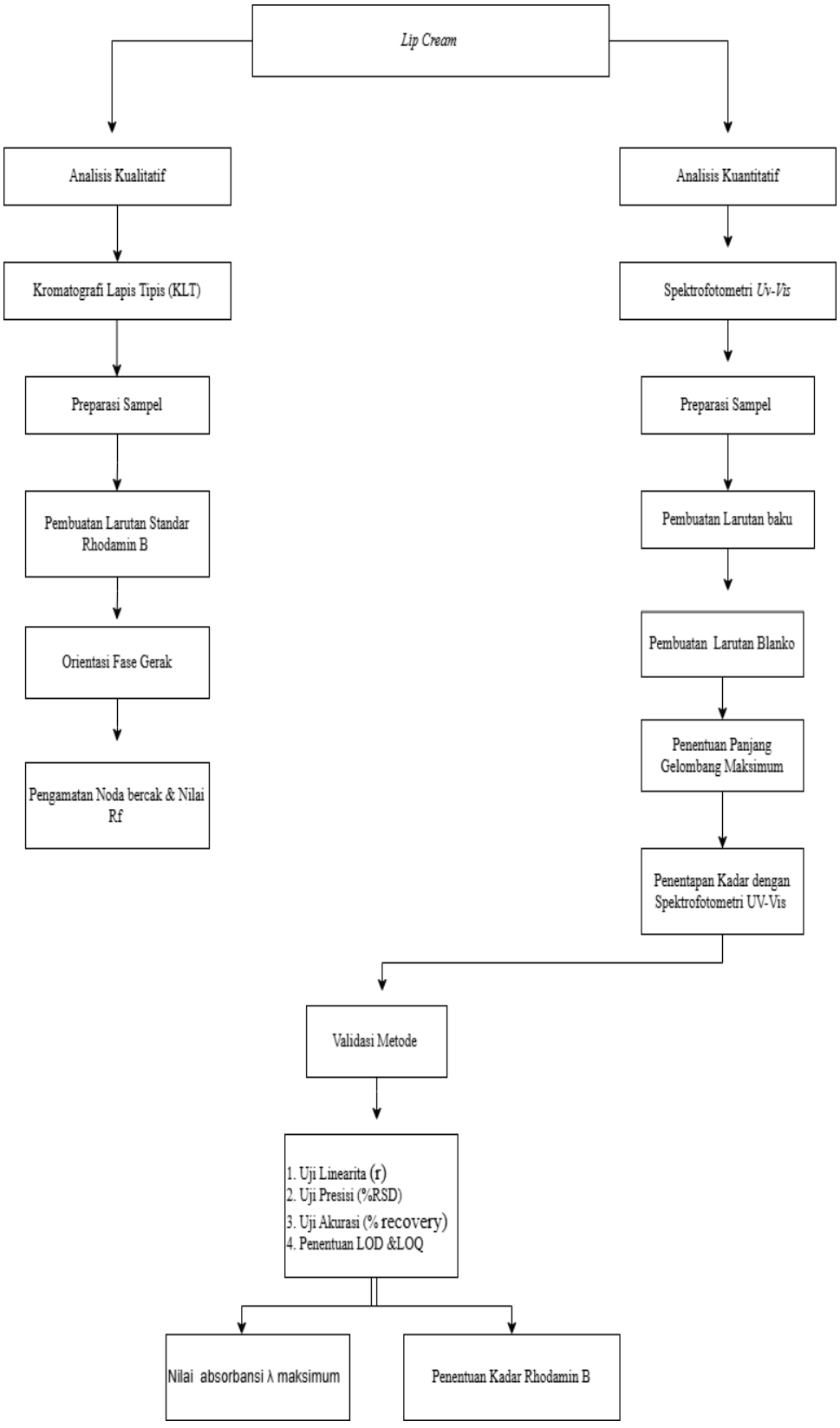
Responden/Subjek Penelitian : 9 Sampel
Respondent/Research Subject

Telah melalui prosedur kaji etik dan dinyatakan layak untuk dilaksanakan
Has proceeded the ethichal assessment procedure and been approved fot implementation

Batam, 29 April 2026
Ketua / *Chairman*,

dr. Ibnu Rushd, M.K.M

Lampiran 2. Skema Kerja



Lampiran 3. Sertifikat Analisis Rhodamin B



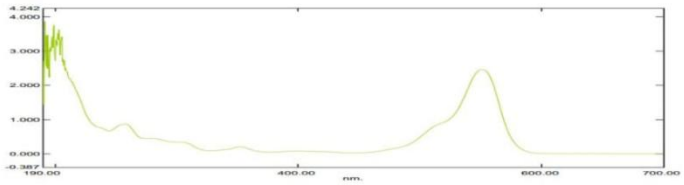
CDH

Certificate of Analysis

cdhfinechemical.com

RHODAMINE B AR FOR MICROSCOPY

PRODUCT CODE	317755	Batch No. : 121024
SYNONYMS	--	Mfg. : Oct. 2024
C.I. NO.	45170	Retest : Sep. 2029
CASR NO.	(81-88-9)	
ATOMIC OR MOLECULAR FORMULA	$C_{28}H_{31}ClN_2O_3$	
ATOMIC OR MOLECULAR WEIGHT	479.02	
PROPERTIES	Very soluble in water and alcohol, forming bluish red, fluorescent solution , slightly soluble in acids or alkalies.	



PARAMETER	LIMIT	OBSERVED
Dye Content	About 80.0%	82.4%
Absor ption maxima (in methanol)	542-554 nm	551 nm
Absorptivity (A1% / 1 cm at \ = 543 nm, in methanol)	Min. 2300	2461
Suitability for microscopy	To pass the test.	Passes test
MAXIMUM LIMIT OF IMPURITY		
Loss on drying (at 110°C)	5.0%	3.1%

Remarks : Complies with the prescribed quality of the above specification.

ANALYST

MANAGER (Q.C.)

microgen CE Certified | ISO 9001 : 2015 14001 : 2015 45001 : 2018 13485 : 2016 | WHO GMP | CE

In compliance with standard specifications of CDH
This COA has been generated electronically and it is valid without signature.

Central Drug House (P) Ltd. | **Corp. Office :** 7/28, Vardaan House, Darya Ganj, New Delhi - 110002 (INDIA)
Mfg Unit : Plot No. D-2/CH/9, Dahej-2, Industrial estate, Dist. Bharuch-392130 (Gujarat)
E-mail : sales@cdhfinechemical.com, **Phone :** +91-11-49404040 (100 Lines)

CERTIFIED QUALITY CERTIFIED

Lampiran 4. Sertifikat Analisis Etanol

Certificate of Analysis

1.00983.2500 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I1296183

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	conforms		conforms	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity or alkalinity	≤ 30	ppm	≤ 30	ppm
Titrable acid	≤ 0.0002	meq/g	0.0001	meq/g
Titrable base	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.790 - 0.793		0.791	
UV absorption	conforms		conforms	
Aldehydes (as Acetaldehyd)	≤ 0.001	%	≤ 0.001	%
Fusel oils	conforms		conforms	
Substances reducing potassium permanganate (as O)	≤ 0.0002	%	≤ 0.0002	%
Substances reducing permanganate (ACS)	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.003	%	≤ 0.003	%
Readily carbonizable substances	conforms		conforms	
Acetone, Isopropyl Alcohol (ACS)	conforms		conforms	
Acetone (GC)	≤ 0.001	%	< 0.001	%
Ethylmethylketone (GC)	≤ 0.02	%	< 0.01	%
Isoamyl alcohol (GC)	≤ 0.05	%	< 0.01	%
2-Propanol (GC)	≤ 0.01	%	< 0.01	%
Higher alcohols (GC)	≤ 0.01	%	< 0.01	%
Volatile impurities (GC) (Acetaldehyde and Acetal)	≤ 10	ppm	< 10	ppm
Volatile impurities (GC) (Benzene)	≤ 2	ppm	< 1	ppm
Volatile impurities (GC) (Methanol)	≤ 100	ppm	< 50	ppm
Volatile impurities (GC) (Total of other impurities)	≤ 300	ppm	< 100	ppm
Volatile impurities (GC) (disregard limit)	≤ 9	ppm	9	ppm
Chloride (Cl)	≤ 0.3	ppm	0.1	ppm
Nitrate (NO_3)	≤ 0.3	ppm	< 0.1	ppm
Phosphate (PO_4)	≤ 0.3	ppm	< 0.1	ppm
Sulfate (SO_4)	≤ 0.3	ppm	< 0.1	ppm
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%

Merck KGaA
Corporation with General Partners
Frankfurter Straße 250
64293 Darmstadt, Germany

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Lampiran 5. Sertifikat Analisis Amonnia Solution

Certificate of Analysis

1.05432.1011 Ammonia solution 25% for analysis EMSURE® ISO,Reag. Ph Eur
Batch Z0948432

	Spec. Values		Batch Values	
Assay (acidimetric, NH_3)	25.0 - 30.0	%	26.5	%
Identity	passes test		passes test	
Appearance of solution	passes test		passes test	
Density (20/20°C)	0.892 - 0.910		0.904	
Carbonate (as CO_2)	≤ 10	ppm	< 10	ppm
Chloride (Cl)	≤ 0.5	ppm	< 0.5	ppm
Phosphate (PO_4)	≤ 0.5	ppm	< 0.5	ppm
Silicon (as SiO_2)	≤ 10	ppm	< 1	ppm
Sulfate (SO_4)	≤ 2	ppm	< 2	ppm
Sulphide (S)	≤ 0.2	ppm	< 0.2	ppm
Pyridine and related substances	≤ 2	ppm	< 2	ppm
Ag (Silver)	≤ 0.020	ppm	< 0.010	ppm
Al (Aluminium)	≤ 0.500	ppm	< 0.200	ppm
Au (Gold)	≤ 0.100	ppm	< 0.020	ppm
Ba (Barium)	≤ 0.050	ppm	< 0.020	ppm
Bi (Bismuth)	≤ 0.100	ppm	< 0.050	ppm
Ca (Calcium)	≤ 0.500	ppm	< 0.200	ppm
Cd (Cadmium)	≤ 0.050	ppm	< 0.020	ppm
Co (Cobalt)	≤ 0.050	ppm	< 0.020	ppm
Cr (Chromium)	≤ 0.050	ppm	< 0.020	ppm
Cu (Copper)	≤ 0.100	ppm	< 0.020	ppm
Fe (Iron)	≤ 0.100	ppm	< 0.050	ppm
Ga (Gallium)	≤ 0.020	ppm	< 0.010	ppm
In (Indium)	≤ 0.020	ppm	< 0.020	ppm
K (Potassium)	≤ 0.500	ppm	< 0.200	ppm
Li (Lithium)	≤ 0.020	ppm	< 0.010	ppm
Mg (Magnesium)	≤ 0.100	ppm	< 0.050	ppm
Mn (Manganese)	≤ 0.050	ppm	< 0.020	ppm
Mo (Molybdenum)	≤ 0.050	ppm	< 0.020	ppm
Na (Sodium)	≤ 0.500	ppm	< 0.200	ppm
Ni (Nickel)	≤ 0.050	ppm	< 0.020	ppm
Pb (Lead)	≤ 0.050	ppm	< 0.020	ppm
Pt (Platinum)	≤ 0.100	ppm	< 0.020	ppm
Sn (Tin)	≤ 0.100	ppm	< 0.020	ppm
Sr (Strontium)	≤ 0.100	ppm	< 0.100	ppm
Ti (Titanium)	≤ 0.100	ppm	< 0.050	ppm
Tl (Thallium)	≤ 0.050	ppm	< 0.010	ppm
Zn (Zinc)	≤ 0.100	ppm	< 0.050	ppm
Oxidizable substances	passes test		passes test	
Substances reducing potassium permanganate (as O)	≤ 5	ppm	< 5	ppm
Residue on ignition (as SO_4)	≤ 10	ppm	< 10	ppm

Merck KGaA
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Frankfurter Straße 250
64293 Darmstadt, Germany

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Lampiran 6. Sembilan sampel *lip cream*



Lampiran 7. Perhitungan Nilai Rf

- Baku Rhodamin B

  Replikasi 1 = $\frac{4,5}{6} = 0,75$

  Replikasi 2 = $\frac{4,6}{6} = 0,76$

  Replikasi 3 = $\frac{4,5}{6} = 0,75$

  Rata-rata = $\frac{0,75+0,76+0,75}{3} = 0,75$

- Sampel S4

  Replikasi 1 = $\frac{4,4}{6} = 0,73$

  Replikasi 2 = $\frac{4,4}{6} = 0,73$

  Replikasi 3 = $\frac{4,5}{6} = 0,75$

  Rata-rata = $\frac{0,73+0,73+0,75}{3} = 0,73$

- Sampel S6

  Replikasi 1 = $\frac{4,4}{6} = 0,73$

  Replikasi 2 = $\frac{4,5}{6} = 0,75$

  Replikasi 3 = $\frac{4,5}{6} = 0,75$

  Rata-rata = $\frac{0,73+0,75+0,75}{3} = 0,74$

- Sampel S7

  Replikasi 1 = $\frac{4,5}{6} = 0,75$

  Replikasi 2 = $\frac{4,5}{6} = 0,75$

  Replikasi 3 = $\frac{4,4}{6} = 0,73$

  Rata-rata = $\frac{0,75+0,75+0,73}{3} = 0,74$

- Sampel S8

  Replikasi 1 = $\frac{4,4}{6} = 0,73$

  Replikasi 2 = $\frac{4,3}{6} = 0,71$

  Replikasi 3 = $\frac{4,4}{6} = 0,73$

  Rata-rata = $\frac{0,73+0,71+0,73}{3} = 0,72$

Lampiran 8. Perhitungan Larutan Standar Rhodamin B

1. Larutan Standar 1000 Ppm

   1 Ppm = $\frac{mg}{L}$

   1000 Ppm = $\frac{1000\ mg}{L}$

   1000 Ppm = $\frac{50\ mg}{0.05\ L}$

   = $\frac{50\ mg}{50\ mL}$

2. Larutan Standar 1000 Ppm ke 100 Ppm

   $V_1 \times M_1 = V_2 \times M_2$

   $V_1 = \frac{V_2 \times M_2}{M_1}$

   $V_1 = \frac{50 \times 100}{1000}$

   $V_1 = 5\ mL$

Lampiran 9. Perhitungan Konsentrasi Larutan Kurva Baku Rhodamin B

a. Larutan 0,5 Ppm

$V_1 \times M_1 = V_2 \times M_2$

$V_1 = \frac{V_2 \times M_2}{M_1}$

$V_1 = \frac{0{,}5 \times 10}{100}$

$V_1 = 0{,}05\ mL = 50\ \mu L$

b. Larutan 1 Ppm

$V_1 \times M_1 = V_2 \times M_2$

$V_1 = \frac{V_2 \times M_2}{M_1}$

$V_1 = \frac{1 \times 10}{100}$

$V_1 = 0{,}1\ mL = 100\ \mu L$

c. Larutan 1,5 Ppm

$V_1 \times M_1 = V_2 \times M_2$

$V_1 = \frac{V_2 \times M_2}{M_1}$

$V_1 = \frac{1{,}5 \times 10}{100}$

$V_1 = 0{,}15\ mL = 150\ \mu L$

d. Larutan 2 Ppm

$V_1 \times M_1 = V_2 \times M_2$

$V_1 = \frac{V_2 \times M_2}{M_1}$

$V_1 = \frac{2 \times 10}{100}$

$V_1 = 0{,}2\ mL = 200\ \mu L$

e. Larutan 2,5 Ppm

$V_1 \times M_1 = V_2 \times M_2$

$V_1 = \frac{V_2 \times M_2}{M_1}$

$V_1 = \frac{2{,}5 \times 10}{100}$

$V_1 = 0{,}25\ mL = 250\ \mu L$

Lampiran 10. Perhitungan Lineritas

No.	Konsentrasi Ppm (x)	Absorbansi	Pembulatan Rata- rata Absorbansi	X^2	Y^2	XY
1.	0,5 Ppm	0,239	0,239	0,25	0,057121	0,1195
		0,239				
		0,239				
2.	1 Ppm	0,37	0,37	1	0,1369	0,37
		0,37				
		0,371				
3.	1.5 Ppm	0,506	0,506	2,25	0,256036	0,759
		0,506				
		0,505				
4.	2 Ppm	0,624	0,623	4	0,388129	1,246
		0,624				
		0,623				
5.	2,5 Ppm	0,779	0,779	6,25	0,606841	1,9475
		0,779				
		0,779				
∑	7,5		2,517	13,75	1,445027	4,442

Perhitungan $r = \frac{n \times (\sum XY) - (\sum X)\,(\sum Y)}{\sqrt{n\,(\sum X^2) - (\sum X)^2} \times \sqrt{n\,(\sum Y^2) - (\sum Y)^2}}$

$$r = \frac{5 \times (4{,}442) - (7{,}5)\,.\,(2{,}517)}{\sqrt{5\,(13{,}75) - (56{,}25)} \times \sqrt{5\,(1{,}445027) - (6{,}335289)}}$$

$$r = \frac{22{,}210 - 18{,}8775}{\sqrt{68{,}75 - 56{,}25} \times \sqrt{7{,}225135 - 6{,}335289}}$$

$$r = \frac{3{,}3325}{\sqrt{12{,}5} \times \sqrt{0{,}889846}}$$

$$r = \frac{3{,}3325}{\sqrt{11{,}123075}}$$

$$r = \frac{3{,}3325}{3{,}335127}$$

$$r = 0{,}999212$$

$$r^2 = 0{,}99842$$

Lampiran 11. Perhitungan Nilai Presisi

Konsentrasi (Ppm)	Absorbansi	Rata – rata Absorbansi	SD	% RSD
1.5	0.548	0.544	0.008485281	1.56%
	0.532			
	0.554			
	0.536			
	0.55			
	0.544			

Perhitungan :

x	$X - \overline{X}$	$(X - \overline{X})^2$
0,548	0,004	0,000016
0,532	-0,012	0,000144
0,554	0,010	0,00010
0,536	-0,008	0,000064
0,55	0,006	0,000036
0,554	0	0

- $SD = \sqrt{\frac{\sum(X-\overline{X})^2}{N-1}}$
  $= \sqrt{\frac{0,00036}{6-1}}$
  $= \sqrt{\frac{0,00036}{5}}$
  $= \sqrt{0.000072}$
  $= 0,008485281$

- $RSD = \frac{SD}{\overline{X}} \times 100\%$
  $= \frac{SD}{Rata-rata\ Absorbansi} \times 100\%$
  $= \frac{0,008485281}{0,544} \times 100\%$
  $= 1,56\%$

Lampiran 12. Perhitungan Nilai Akurasi

No.	Konsentrasi (Ppm)	Absorbansi	*% Recovery*	Rata – rata % *Recovery*
1.	0.5	0.239	102.26%	102.26%
		0.239	102.26%	
		0.239	102.26%	
2.	1.5	0.506	101.00%	100.92%
		0.506	101.00%	
		0.505	100.75%	
3.	2.5	0.779	101.65%	101.65%
		0.779	101.65%	
		0.779	101.65%	

Persamaan Regresi Linear y = 0,266x + 0,103

% Recovery = $\frac{Konsentrasi\ yang\ Diperoleh}{Konsentrasi\ Sebenarnya} \times 100\%$

Perhitungan :

1. Konsentrasi 0,5 Ppm
   - Replikasi I

     y = 0,266x + 0,103

     x = $\frac{0,239 - 0,103}{0,266}$

     x = $0,511\ Ppm$

     % Recovery = $\frac{0,511}{0,5} \times 100\%$

     = $102,26\%$
   - Replikasi II

     y = 0,266x + 0,103

     x = $\frac{0,239 - 0,103}{0,266}$

     x = $0,511\ Ppm$

     % Recovery = $\frac{0,511}{0,5} \times 100\%$

     = $102,26\%$

- Replikasi III

  y = 0,266x + 0,103

  x = $\frac{0,239 - 0,103}{0,266}$

  x = $0,511\ Ppm$

  % Recovery = $\frac{0,511}{0,5} \times 100\%$

  = $102,26\%$

2. Konsentrasi 1,5 Ppm

- Replikasi I

  y = 0,266x + 0,103

  x = $\frac{0,506 - 0,103}{0,266}$

  x = $1,515\ Ppm$

  % Recovery = $\frac{1,515}{1,5} \times 100\%$

  = $101,00\%$

- Replikasi II

  y = 0,266x + 0,103

  x = $\frac{0,506 - 0,103}{0,266}$

  x = $1,515\ Ppm$

  % Recovery = $\frac{1,515}{1,5} \times 100\%$

  = $101,00\%$

- Replikasi III

  y = 0,266x + 0,103

  x = $\frac{0,505 - 0,103}{0,266}$

  x = $1,511 Ppm$

  % Recovery = $\frac{1,511}{1,5} \times 100\%$

$= 100{,}75\%$

3. Konsentrasi 2,5 Ppm

- Replikasi I

y = 0,266x + 0,103

$x = \frac{0{,}779 - 0{,}103}{0{,}266}$

$x = 2{,}541\ Ppm$

% Recovery $= \frac{2{,}541}{2{,}5} \times 100\%$

$= 101{,}65\%$

- Replikasi II

y = 0,266x + 0,103

$x = \frac{0{,}779 - 0{,}103}{0{,}266}$

$x = 2{,}541\ Ppm$

% Recovery $= \frac{2{,}541}{2{,}5} \times 100\%$

$= 101{,}65\%$

- Replikasi III

y = 0,266x + 0,103

$x = \frac{0779 - 0{,}103}{0{,}266}$

$x = 2{,}541 Ppm$

% Recovery $= \frac{2{,}541}{2{,}5} \times 100\%$

$= 101{,}65\%$

Lampiran 13. Perhitungan Nilai Lod dan LoQ

No.	Konsentrasi	Absorbansi (Y)	Konsntrasi Terukur (Y)'	(Y - Y)	(Y - Y)2
1.	0.5	0.239	0.23685	0.00215	0.0000046225
2.	1	0.37	0.3701	-0,0001	0.0000000100
3.	1.5	0.506	0.50335	0.00265	0.0000070225
4.	2	0.623	0.6366	-0.0136	0.00018496
5.	2.5	0.779	0.76985	0.00915	0,0000837225
		Jumlah			0.0002803375
		SD			0.009666739
		LoD			0.10881882
		LoQ			0.3627294

1. Perhitungan Nilai Y′ :
   - Konsentrasi 0,5 Ppm
     y = 0,2665x + 0,1036
     y = 0,2665 (0,5) + 0,1036
     y = 0, 2665 (0,5) + 0,1036
     y = 0,23685
   - Konsentrasi 1 Ppm
     y = 0,2665x + 0,1036
     y = 0,2665 (1) + 0,1036
     y = 0,2665 (1) + 0,1036
     y = 0,3701
   - Konsentrasi 1,5 Ppm
     y = 0,2665x + 0,1036
     y = 0,2665 (1,5) + 0,1036
     y = 0,2665 (1,5) + 0,1036
     y = 0,50335
   - Konsentrasi 2 Ppm
     y = 0,2665x + 0,1036
     y = 0,2665 (2) + 0,1036
     y = 0,2665 (2) + 0,1036
     y = 0,6366

- Konsentrasi 2,5 Ppm
  y = 0,2665x + 0,1036

  y = 0,2665 (2,5) + 0,1036

  y = 0,2665 (2,5) + 0,1036

  y = 0,76985

2. Perhitungan Standar Deviasi Residual (SD)

$$SD = \sqrt{\frac{\sum(Y-Y')^2}{n-2}}$$

$$SD = \sqrt{\frac{0,00028033}{5-2}}$$

$$SD = \sqrt{\frac{0,00028033}{3}}$$

$$SD = \sqrt{0,00009344} \approx 0,0096666$$

$$SD = 0,0096666$$

3. Perhitungan Lod dan LoQ

- LoD

$$LoD = \frac{3\times SD}{Slope}$$

$$LoD = \frac{3\times 0,0096666}{0,2665}$$

$$LoD = \frac{0,0289998}{0,2665}$$

$$LoD = 0,108 \text{ Ppm}$$

- LoQ

$$LoQ = \frac{10\times SD}{Slope}$$

$$LoQ = \frac{10\times 0,0096666}{0,2665}$$

$$LoD = \frac{0,09666}{0,2665}$$

$$LoD = 0,362 \text{ Ppm}$$

Lampiran 14. Perhitungan Kadar Rhodamin B

$$\% \text{ Kadar} = \frac{\text{ppm } xV(L)xFp}{BeratSampel(mg)} \times 100\%$$

a. Sampel 4

- Replikasi I

  y = 0,2665x +0,1036

  $x = \frac{0,234-0,1036}{0,2665}$

  x = 0,489 ppm

  $\% \text{ Kadar} = \frac{0,489\ ppm\ x\ 0,05L\ x5}{1000}\ x\ 100\%$

  = 0,0122%

- Replikasi II

  y = 0,2665x +0,1036

  $x = \frac{0,236-0,1036}{0,2665}$

  x = 0,496 ppm

  $\% \text{ Kadar} = \frac{0,496\ ppm\ x\ 0,05L\ x5}{1000}\ x\ 100\%$

  = 0,0124%

- Replikasi III

  y = 0,2665x +0,1036

  $x = \frac{0,238-0,1036}{0,2665}$

  x = 0,504 ppm

  $\% \text{ Kadar} = \frac{0,504 \text{ ppm } x\ 0,05L\ x5}{1000}\ x\ 100\%$

  = 0,0126%

  Rata- rata $= \frac{(0,0122)+(0,0124)+(0,0126)}{3} = 0,0124\%$

  $\frac{(0,489)+(0,496)+(0,504)}{3} = 0,496$ ppm

b. Sampel 6

- Replikasi I

  y = 0,2665x +0,1036

  $x = \frac{0,429-0,1036}{0,2665}$

x = 1,221 ppm

% Kadar = $\frac{1{,}221\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0305%

- Replikasi II

y = 0,2665x +0,1036

x = $\frac{0{,}432-0{,}1036}{0{,}2665}$

x = 1,232

% Kadar = $\frac{1{,}232x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0308%

- Replikasi III

y = 0,2665x +0,1036

x = $\frac{0{,}433-0{,}1036}{0{,}2665}$

x = 1,236

% Kadar = $\frac{1{,}221\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0309%

Rata- rata = $\frac{(0{,}0305)+(0{,}0308)+(0{,}0309)}{3}$ = 0,0307%

$\frac{(1{,}221)+(1{,}232)+(1{,}236)}{3} = 1{,}229$ ppm

c. Sampel 7

- Replikasi I

y = 0,2665x +0,1036

x = $\frac{0{,}382-0{,}1036}{0{,}2665}$

x = 1,044 ppm

% Kadar = $\frac{1{,}044\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0261%

- Replikasi II

y = 0,2665x +0,1036

x = $\frac{0{,}385-0{,}1036}{0{,}2665}$

x =1,055 ppm

% Kadar = $\frac{1{,}055\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0263%

- Replikasi III

y = 0,2665x +0,1036

x = $\frac{0{,}388-0{,}1036}{0{,}2665}$

x = 1,067 ppm

% Kadar = $\frac{1{,}067\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0266%

Rata- rata = $\frac{(0{,}0261)+(0{,}0263)+(0{,}0266)}{3}$ = 0,0263%

$\frac{(1{,}044)+(1{,}055)+(1{,}067)}{3} = 1{,}055$ ppm

d. Sampel 8

- Replikasi I

y = 0,2665x +0,1036

x = $\frac{0{,}295-0{,}1036}{0{,}2665}$

x = 0,718 ppm

% Kadar = $\frac{0{,}718\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0179%

- Replikasi II

y = 0,2665x +0,1036

x = $\frac{0{,}298-0{,}1036}{0{,}2665}$

x = 0,729 ppm

% Kadar = $\frac{0{,}729\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0182%

- Replikasi III

y = 0,2665x +0,1036

x = $\frac{0{,}301-0{,}1036}{0{,}2665}$

x = 0,740 ppm

% Kadar = $\frac{0{,}740\ ppm\ x\ 0{,}05L\ x5}{1000}\ x\ 100\%$

= 0,0185%

Rata- rata = $\frac{(0{,}0179)+(0{,}0182)+(0{,}0185)}{3}$ = 0,0182 %

$\frac{(0{,}718)+(0{,}729)+(0{,}740)}{3} = 0{,}729$ ppm

Lampiran 15. Analisis Deskriptif

Descriptives

	Kode sampel lip cream			Statistic	Std. Error
Kadar Rhodamin B (%)	S4	Mean		.012400	.0001155
		95% Confidence Interval for Mean	Lower Bound	.011903	
			Upper Bound	.012897	
		5% Trimmed Mean		.	
		Median		.012400	
		Variance		.000	
		Std. Deviation		.0002000	
		Minimum		.0122	
		Maximum		.0126	
		Range		.0004	
		Interquartile Range		.	
		Skewness		.000	1.225
		Kurtosis		.	.
	S6	Mean		.030733	.0001202
		95% Confidence Interval for Mean	Lower Bound	.030216	
			Upper Bound	.031250	
		5% Trimmed Mean		.	
		Median		.030800	
		Variance		.000	
		Std. Deviation		.0002082	
		Minimum		.0305	
		Maximum		.0309	
		Range		.0004	
		Interquartile Range		.	
		Skewness		-1.293	1.225
		Kurtosis		.	.
	S7	Mean		.026333	.0001453
		95% Confidence Interval for Mean	Lower Bound	.025708	
			Upper Bound	.026958	
		5% Trimmed Mean		.	
		Median		.026300	
		Variance		.000	
		Std. Deviation		.0002517	
		Minimum		.0261	
		Maximum		.0266	
		Range		.0005	
		Interquartile Range		.	
		Skewness		.586	1.225
		Kurtosis		.	.
	S8	Mean		.018200	.0001732
		95% Confidence Interval for Mean	Lower Bound	.017455	
			Upper Bound	.018945	
		5% Trimmed Mean		.	
		Median		.018200	
		Variance		.000	
		Std. Deviation		.0003000	
		Minimum		.0179	
		Maximum		.0185	
		Range		.0006	
		Interquartile Range		.	
		Skewness		.000	1.225
		Kurtosis		.	.

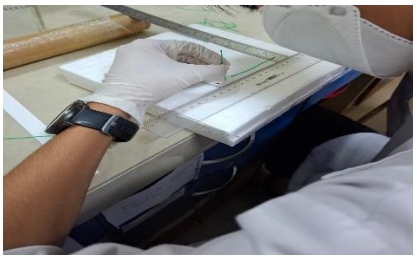
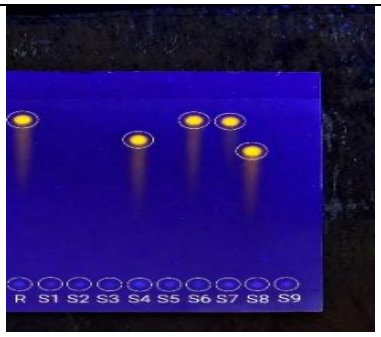
Lampiran 16. Analisis Data Statistik Normalitas

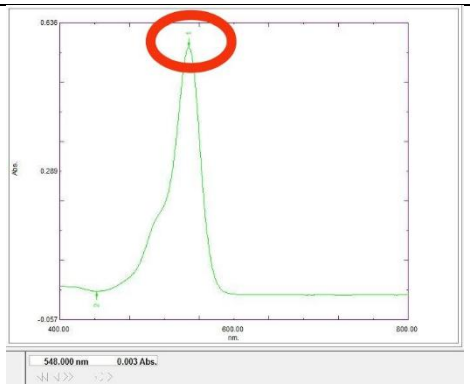
Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kode sampel lip cream	Statistic	df	Sig.	Statistic	df	Sig.
Kadar Rhodamin B (%)	S4	.175	3	.	1.000	3	1.000
	S6	.292	3	.	.923	3	.463
	S7	.219	3	.	.987	3	.780
	S8	.175	3	.	1.000	3	1.000

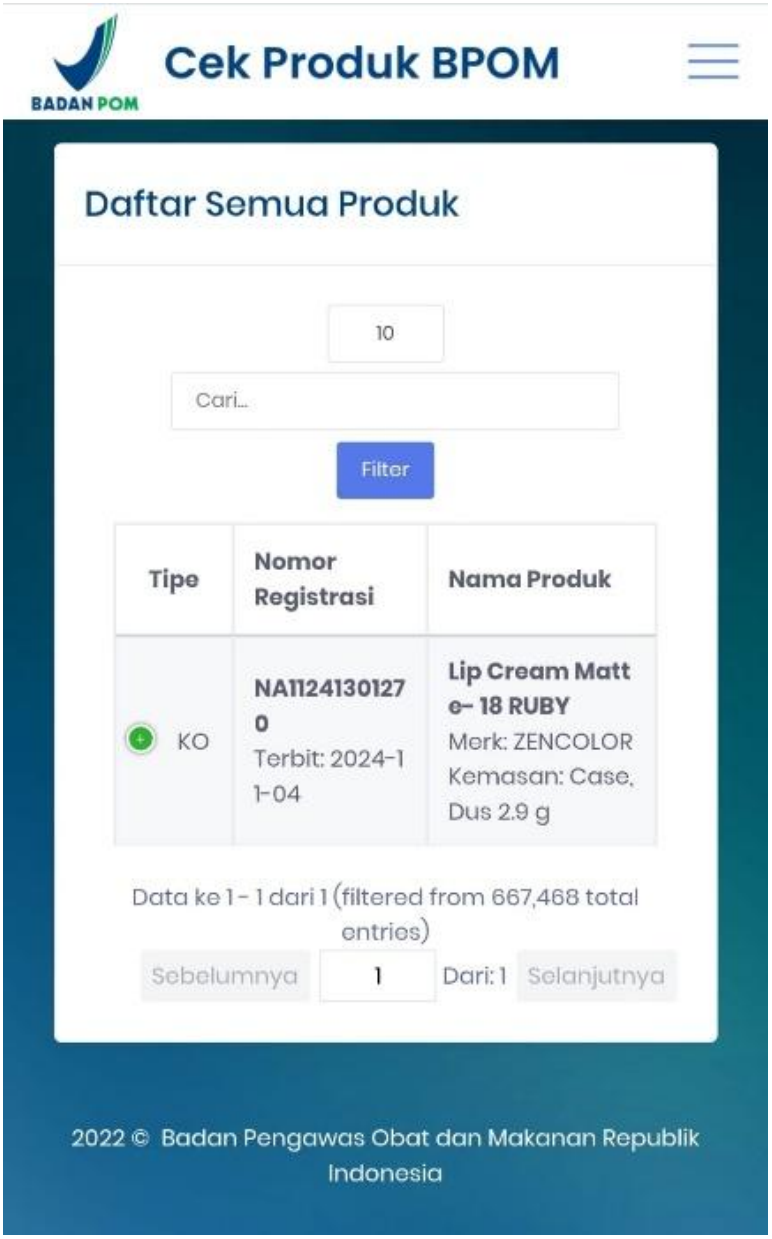
a. Lilliefors Significance Correction

Lampiran 17. Kegiatan Pelaksanaan Penelitian

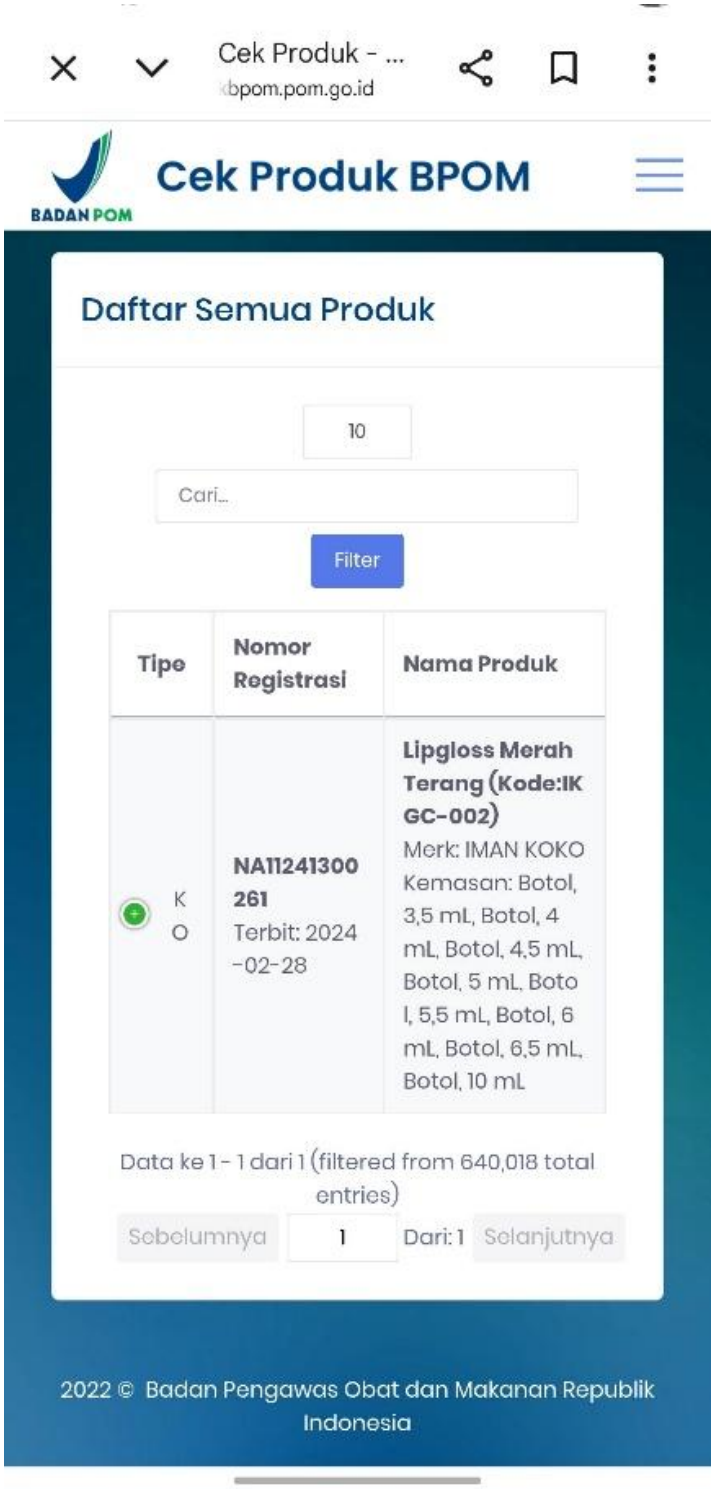
No.	Gambar	Perlakuan
1.		Pengambilan 9 sampel *lip cream*
2.		Pembuatan larutan baku Rhodamin B
3.		Pembuatan larutan sampel *lip cream*
4.		Melakukan penotolan pada plat KLT
5.		Hasil perlakuan klt: Berdasarkan bercak dan nilai r*f* terdapat 4 dari 9 sampel yang sesuai dengan baku pembanding Rhodamin B (0,75) sehingga hasil uji klt dinyatakan 4 sampel positif.

No.	Gambar	Perlakuan
7.		Pengkuran panjang gelombang maksimum Rhodamin B (548 nm)

Lampiran 18. Daftar Produk *Lip cream* Zen Color N0 18 BPOM



Lampiran 19. Daftar Produk *Lip cream* Iman Koko IKGC-002 BPOM



Lampiran 20. Daftar Produk *Lip cream* Pinkflash 003 BPOM

