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LAMPIRAN

Lampiran 1 Surat *Ethical Clearance*



Kementerian Kesehatan
Poltekkes Medan
Komisi Etik Penelitian Kesehatan
8 Jalan Jamin Ginting KM. 13,5
Medan, Sumatera Utara 20137
☎ (061) 8368633
🌐 <https://poltekkes-medan.ac.id>

KETERANGAN LAYAK ETIK
DESCRIPTION OF ETHICAL EXEMPTION
"ETHICAL EXEMPTION"

No.01.26.1660/KEPK/POLTEKKES KEMENKES MEDAN 2025

Protokol penelitian versi 1 yang diusulkan oleh :
The research protocol proposed by

Peneliti utama : Raisya Fadhyah Pulungan
Principal In Investigator

Nama Institusi : Poltekkes Kemenkes Medan
Name of the Institution

Dengan judul:
Title

"Analisis Kandungan Polifenol Dalam Teh Hijau Bubuk (Matcha) Menggunakan Spektrofotometer Uv-Vis"

"Analysis of Polyphenol Content in Green Tea Powder (Matcha) Using a UV-Vis Spectrophotometer"

Dinyatakan layak etik sesuai 7 (tujuh) Standar WHO 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, 4) Risiko, 5) Bujukan/Eksploitasi, 6) Kerahasiaan dan Privacy, dan 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukkan oleh terpenuhinya indikator setiap standar.

Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011 Standards, 1) Social Values, 2) Scientific Values, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Exploitation, 6) Confidentiality and Privacy, and 7) Informed Consent, referring to the 2016 CIOMS Guidelines. This is as indicated by the fulfillment of the indicators of each standard.

Pernyataan Laik Etik ini berlaku selama kurun waktu tanggal 31 Juli 2025 sampai dengan tanggal 31 Juli 2026.

This declaration of ethics applies during the period July 31, 2025 until July 31, 2026.



July 31, 2025
Chairperson,



Dr. Lestari Rahmah, MKT

Lampiran 2 Surat Keterangan Bebas Laboratorium



UNIVERSITAS MUSLIM NUSANTARA AL WASHLIYAH
LABORATORIUM FARMASI TERPADU
SK. No. 424/DIKTI/Kep/1996 dan SK. No. 181/DIKTI/Kep/2002
Kampus Muhammad Ansyad Thalib Lubis: Jl. Garu II No. 93 Medan, Kampus Muhammad Yunus Karim: Jl. Garu II No. 02 Medan,
Kampus Abdurrahman Syitab: Jl. Garu II No. 52 Medan, Kampus Syaikh H. Muhammad Yunus, Jl. Stadion/Gedung Arca Medan,
Kampus Asidm: Jl. Medan Perbaungan Desa Sukamandi Hilir Kec. Pagar Merbau, Lubuk Pakam.
Telp. (061) 7867044, Fax. 7862747, Medan 20147 Home Page: <http://www.umnaw.ac.id> E-mail: info@umnaw.ac.id

SURAT KETERANGAN
BEBAS LABORATORIUM
No.30/Lab-FT/UMNAB/B.03/V/2025

Kepala Laboratorium Farmasi Terpadu Universitas Muslim Nusantara Al-Washliyah Medan
dengan ini menerangkan bahwa;

Nama : Raisya Fadhy Pulungan
NPM : PO7534022036
Fakultas/Prodi : Teknologi Laboratorium Medis
Jenjang pendidikan : D-3

Benar telah bebas dari peminjaman alat dan fasilitas laboratorium serta telah menyelesaikan
segala administrasi pada Laboratorium Farmasi Terpadu Universitas Muslim Nusantara
Al-Washliyah Medan.

Lampiran Alat Yang Mereka Kerjakan :
Uji Kadar Polifenol Menggunakan Spektrofotometer UV-Vis.

Demikian surat keterangan ini dibuat untuk dapat digunakan sebagaimana mestinya.

Medan, 22 Mei 2025
Mengetahui,
Kepala Laboratorium Farmasi Terpadu

(Anny Sartika Daulay, S.Si., M.Si.)



Lampiran 3 Kartu Bimbingan

Lampiran 3 Kartu Bimbingan



Kementerian Kesehatan

Direktorat Jenderal
Sumber Daya Kesehatan Manusia
Poltekkes Medan

Jalan Jamin Ginting KM. 13.5
Medan, Sumatera Utara 20137
(061) 8368633
<https://poltekkes-medan.ac.id>

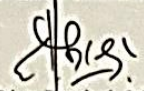
PRODI D-III JURUSAN TEKNOLOGI LABORATORIUM MEDIS POLTEKKES KEMENKES MEDAN

KARTU BIMBINGAN KARYA TULIS ILMIAH T.A. 2024/2025

NAMA : Raisya Fadhya Pulungan
NIM : P07534022036
NAMA DOSEN PEMBIMBING : Dian Pratiwi, M.Si
JUDUL KTI : Analisis Kadar Polifenol dalam Teh Hijau
Bubuk (*Matcha*) menggunakan
Spektrofotometer UV-Vis

No	Hari/Tanggal Bimbingan	Materi Bimbingan	Paraf Dosen Pembimbing
1.	Senin, 06 Januari 2025	Pengajuan Judul	✓
2.	Senin, 06 Januari 2025	ACC Judul	✓
3.	Jumat, 10 Januari 2025	Pengajuan Tentatif	✓
4.	Selasa, 11 Februari 2025	Bimbingan Bab I-III	✓
5.	Senin, 24 Februari 2025	Perbaikan Bab I-III	✓
6.	Kamis, 06 Maret 2025	Perbaikan Bab I-III	✓
7.	Selasa, 11 Maret 2025	ACC Proposal	✓
8.	Kamis, 08 Mei 2025	Revisi Proposal	✓
9.	Rabu, 14 Mei 2025	Penelitian	✓
10.	Rabu, 28 Mei 2025	Bimbingan Bab IV-V	✓
11.	Kamis, 29 Mei 2025	Perbaikan Bab IV-V	✓
12.	Senin, 02 Juni 2025	ACC KTI	✓

Medan, 03 Juni 2025
Dosen Pembimbing


Dian Pratiwi, M.Si
NIP.199306152020122006

Lampiran 4 *Similarity*

KARYA TULIS ILMIAH RAISYA FADHYA PULUNGAN.docx			
ORIGINALITY REPORT			
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2	ecampus.poltekkes-medan.ac.id Internet Source	3%	
3	eprints.walisongo.ac.id Internet Source	1%	
4	Submitted to Badan PPSDM Kesehatan Kementerian Kesehatan Student Paper	1%	
5	Submitted to Saint Paul's High School Student Paper	1%	
6	repository.unfari.ac.id Internet Source	<1%	
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11	Submitted to Universitas Muhammadiyah Semarang Student Paper	<1%	

Lampiran 5 Sampel



Sampel A



Sampel B



Sampel C



Sampel D



Sampel E

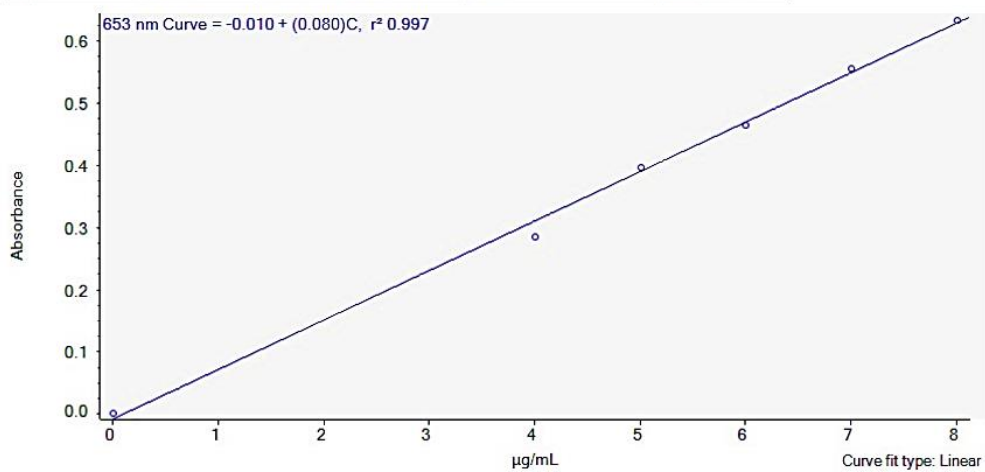
Lampiran 6 Kurva Kalibrasi Asam Galat

Thermo Scientific

5/17/2025

Kurva Kalibrasi Folifenol

#	Sample ID	User Name	Date and Time	Analyte 1 (µg/mL)	Use	Abs 653
1	0	ASUS	5/17/2025 1:42:38 PM	0.000	Yes	0.000
2	1	ASUS	5/17/2025 1:42:51 PM	4.000	Yes	0.285
3	2	ASUS	5/17/2025 1:43:33 PM	5.000	Yes	0.395
4	3	ASUS	5/17/2025 1:44:23 PM	6.000	Yes	0.464
5	4	ASUS	5/17/2025 1:45:04 PM	7.000	Yes	0.555
6	5	ASUS	5/17/2025 1:45:41 PM	8.000	Yes	0.633



Lampiran 7 Absorbansi Sampel

- Sampel A

Thermo Scientific

5/17/2025

Penetapan Kadar Folifenol pada Sampel Matcha

#	Sample Name	User Name	653nm (Abs)
1	Sample 4 p1	ASUS	0.265
2	Sample 4 p2	ASUS	0.265
3	Sample 4 p2	ASUS	0.265

- Sampel B

Thermo Scientific

5/22/2025

Penetapan Kadar Folifenol pada Sampel Matca

#	Sample Name	User Name	653nm (Abs)
1	Sample 2 p1	ASUS	0.157
2	Sample 2 p2	ASUS	0.158
3	Sample 2 p3	ASUS	0.157

- Sampel C

Thermo Scientific

5/17/2025

Penetapan Kadar Fenolik pada Sampel Matcha

#	Sample Name	User Name	653nm (Abs)
1	Sample 3 p1	ASUS	0.326
2	Sample 3 p2	ASUS	0.326
3	Sample 3 p3	ASUS	0.327

- Sampel D

Thermo Scientific

5/22/2025

Penetapan Kadar Folifenol pada Sampel Matca

#	Sample Name	User Name	653nm (Abs)
1	Sample 5 p1	ASUS	0.475
2	Sample 5 p2	ASUS	0.474
3	Sample 5 p3	ASUS	0.474

- Sampel E

Thermo Scientific

5/17/2025

Penetapan Kadar Folifenol pada Sampel Matcha

#	Sample Name	User Name	653nm (Abs)
1	Sample 1 p1	ASUS	0.080
2	Sample 1 p2	ASUS	0.079
3	Sample 1 p2	ASUS	0.080

Lampiran 8 Perhitungan Konsentrasi Larutan Standar Asam Galat

- Konsentrasi 4 ppm

$$V_1C_1 = V_2C_2$$

$$V_1 \cdot 100 \text{ ppm} = 10 \text{ mL} \cdot 4 \text{ ppm}$$

$$V_1 = 40 / 100 = 0,4 \text{ mL}$$

- Konsentrasi 5 ppm

$$V_1C_1 = V_2C_2$$

$$V_1 \cdot 100 \text{ ppm} = 10 \text{ mL} \cdot 5 \text{ ppm}$$

$$V_1 = 50 / 100 = 0,5 \text{ mL}$$

- Konsentrasi 6 ppm

$$V_1C_1 = V_2C_2$$

$$V_1 \cdot 100 \text{ ppm} = 10 \text{ mL} \cdot 6 \text{ ppm}$$

$$V_1 = 60 / 100 = 0,6 \text{ mL}$$

- Konsentrasi 7 ppm

$$V_1C_1 = V_2C_2$$

$$V_1 \cdot 100 \text{ ppm} = 10 \text{ mL} \cdot 7 \text{ ppm}$$

$$V_1 = 70 / 100 = 0,7 \text{ mL}$$

- Konsentrasi 8 ppm

$$V_1C_1 = V_2C_2$$

$$V_1 \cdot 100 \text{ ppm} = 10 \text{ mL} \cdot 8 \text{ ppm}$$

$$V_1 = 80 / 100 = 0,8 \text{ mL}$$

Lampiran 9 Perhitungan Kadar Polifenol Dalam Sampel

• Sampel A1

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,265 = 0,0797x + (-0,0098)$$

$$x = \frac{0,265 + 0,0098}{0,0797}$$

$$= 3,4479 \mu\text{g/g}$$

Sampel A2

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,265 = 0,0797x + (-0,0098)$$

$$x = \frac{0,265 + 0,0098}{0,0797}$$

$$= 3,4479 \mu\text{g/g}$$

Sampel A3

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,265 = 0,0797x + (-0,0098)$$

$$x = \frac{0,265 + 0,0098}{0,0797}$$

$$= 3,4479 \mu\text{g/g}$$

$$\text{Rata-rata} = \frac{\text{Pengulangan 1} + \text{Pengulangan 2} + \text{Pengulangan 3}}{3}$$

$$= \frac{3,44792974 + 3,44792974 + 3,44792974}{3}$$

$$= 3,4479 \mu\text{g/g}$$

- **Sampel B1**

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,157 = 0,0797x + (-0,0098)$$

$$x = \frac{0,157 + 0,0098}{0,0797}$$

$$= 2,0928 \mu\text{g/g}$$

Sampel B2

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,158 = 0,0797x + (-0,0098)$$

$$x = \frac{0,158 + 0,0098}{0,0797}$$

$$= 2,1053 \mu\text{g/g}$$

Sampel B3

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,157 = 0,0797x + (-0,0098)$$

$$x = \frac{0,157 + 0,0098}{0,0797}$$

$$= 2,0928 \mu\text{g/g}$$

$$\text{Rata-rata} = \frac{\text{Pengulangan 1} + \text{Pengulangan 2} + \text{Pengulangan 3}}{3}$$

$$= \frac{2,09284818 + 2,10539523 + 2,09284818}{3}$$

$$= 2,0970 \mu\text{g/g}$$

- **Sampel C1**

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,326 = 0,0797x + (-0,0098)$$

$$x = \frac{0,326 + 0,0098}{0,0797}$$

$$= 4,2133 \mu\text{g/g}$$

Sampel C2

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,326 = 0,0797x + (-0,0098)$$

$$x = \frac{0,326 + 0,0098}{0,0797}$$

$$= 4,2133 \mu\text{g/g}$$

Sampel C3

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,327 = 0,0797x + (-0,0098)$$

$$x = \frac{0,327 + 0,0098}{0,0797}$$

$$= 4,2259 \mu\text{g/g}$$

$$\text{Rata-rata} = \frac{\text{Pengulangan 1} + \text{Pengulangan 2} + \text{Pengulangan 3}}{3}$$

$$= \frac{4,21329987 + 4,21329987 + 4,22584693}{3}$$

$$= 4,2175 \mu\text{g/g}$$

- **Sampel D1**

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,475 = 0,0797x + (-0,0098)$$

$$x = \frac{0,475 + 0,0098}{0,0797}$$

$$= 6,0828 \mu\text{g/g}$$

Sampel D2

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,474 = 0,0797x + (-0,0098)$$

$$x = \frac{0,474 + 0,0098}{0,0797}$$

$$= 6,0702 \mu\text{g/g}$$

Sampel D3

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,474 = 0,0797x + (-0,0098)$$

$$x = \frac{0,474 + 0,0098}{0,0797}$$

$$= 6,0702 \mu\text{g/g}$$

$$\text{Rata-rata} = \frac{\text{Pengulangan 1} + \text{Pengulangan 2} + \text{Pengulangan 3}}{3}$$

$$= \frac{6,08281054 + 6,07026349 + 6,07026349}{3}$$

$$= 6,0744 \mu\text{g/g}$$

- **Sampel E1**

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,080 = 0,0797x + (-0,0098)$$

$$x = \frac{0,080 + 0,0098}{0,0797}$$

$$= 1,1267 \mu\text{g/g}$$

Sampel E2

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,079 = 0,0797x + (-0,0098)$$

$$x = \frac{0,079 + 0,0098}{0,0797}$$

$$= 1,1142 \mu\text{g/g}$$

Sampel E3

$$y = ax + b$$

$$y = 0,0797x + (-0,0098)$$

$$0,080 = 0,0797x + (-0,0098)$$

$$x = \frac{0,080 + 0,0098}{0,0797}$$

$$= 1,1267 \mu\text{g/g}$$

$$\text{Rata-rata} = \frac{\text{Pengulangan 1} + \text{Pengulangan 2} + \text{Pengulangan 3}}{3}$$

$$= \frac{1,12672522 + 1,11417817 + 1,12672522}{3}$$

$$= 1,1225 \mu\text{g/g}$$

Lampiran 10 Dokumentasi Penelitian



Pengujian Test Kit Alkohol



Pembuatan Larutan Untuk
Mengukur Kurva Kalibrasi



Pengukuran Panjang Gelombang



Pengujian Sampel



Penimbangan Sampel Teh Hijau
Bubuk (*Matcha*) Sebanyak 1g



Pengukuran Absorbansi
Menggunakan Spektrofotometer

RIWAYAT HIDUP



Raisya Fadhya Pulungan

Penulis lahir di kota Tebing Tinggi, pada 14 Desember 2004. Penulis merupakan anak kedua dari dua bersaudara, abang bernama Rifky Ari Fahmi Pulungan, anak dari ayah yang bernama Dodi Kurniawan Pulungan, S.T dan Ibu yang bernama Yusniar, S.Pd. Penulis menempuh jenjang pendidikan Sekolah Dasar di SDS Budi Satrya Medan dan selesai pada tahun 2016, kemudian menamatkan Sekolah Menengah

Pertama di SMP-IT Nurul Ilmi Medan Estate dan selesai pada tahun 2019 dan tamat dari Sekolah Menengah Atas MAN 1 Medan pada tahun 2022. Penulis kemudian diterima sebagai mahasiswa jurusan Teknologi Laboratorium Medis program studi Diploma III (DIII) di Poltekkes Kemenkes Medan.

Selama kegiatan perkuliahan, penulis aktif mengikuti kegiatan organisasi dikampus, seperti Himpunan Mahasiswa Jurusan (HMJ) Teknologi Laboratorium Medis Poltekkes Kemenkes Medan. Pada semester 6 melakukan Praktek Kerja Lapangan (PKL) di Medan, tepatnya di RSUD Bunda Thamrin Medan dan RSUP Haji Adam Malik Medan. Begitu banyak ilmu dan pelajaran yang sangat bermanfaat semasa perkuliahan ini dan semoga dapat dijadikan pembelajaran dimasa depan.