

## DAFTAR PUSTAKA

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## LAMPIRAN

### 1. Surat Rekomendasi Persetujuan Etik Penelitian


 KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
 UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN  
 KOMITE ETIK PENELITIAN KESEHATAN  
 RSPTN UNIVERSITAS HASANUDDIN  
 RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR  
 Sekretariat : Lantai 2 Gedung Laboratorium Terpadu  
 JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.  
 Contact Person: dr. Agussalim Bukhari, MMed.PhD, SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

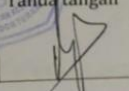


**REKOMENDASI PERSETUJUAN ETIK**

Nomor : 458/UN4.6.4.5.31/PP36/2020

Tanggal: 24 Agustus 2020

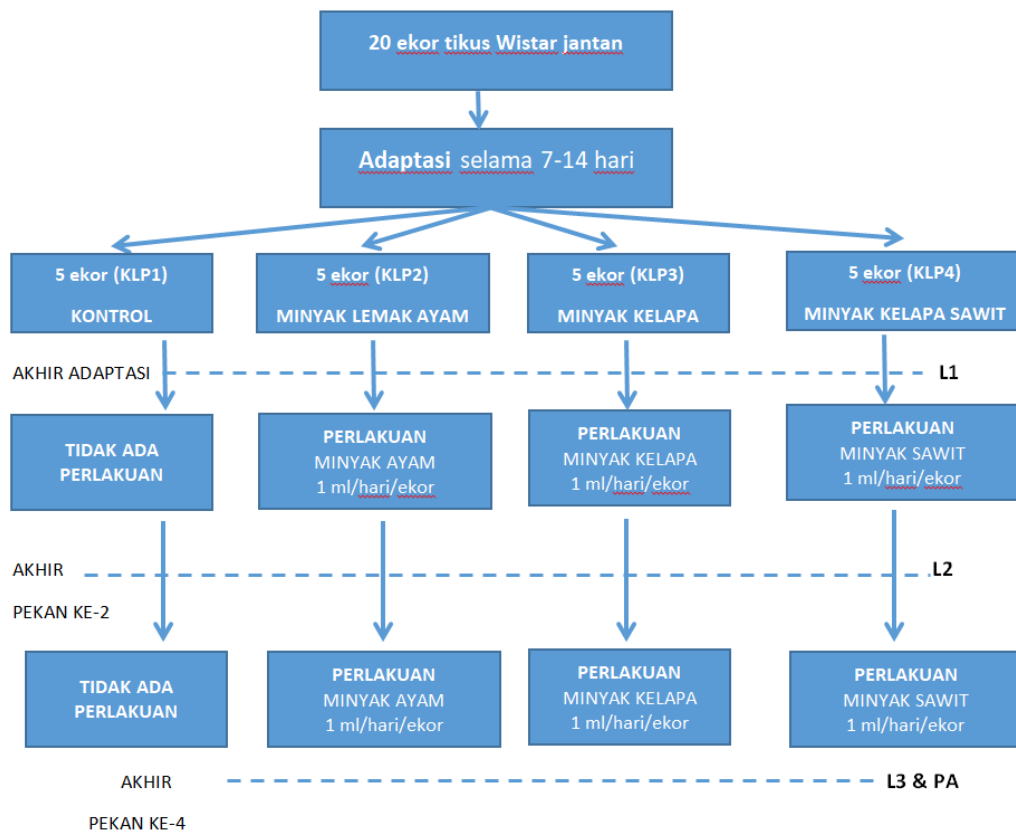
Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH20070337	No Sponsor Protokol	
Peneliti Utama	<b>dr. Andi Asda Astiah</b>	Sponsor	
Judul Peneliti	Pengaruh Pemberian Minyak Lemak Ayam, Minyak Kelapa, dan Minyak Kelapa Sawit Terhadap Profil Lipid Dan Gambaran Histologi Liver Pada Tikus Wistar (Rattus Norvegicus) Jantan		
No Versi Protokol	<b>1</b>	Tanggal Versi	<b>30 Juli 2020</b>
No Versi PSP		Tanggal Versi	
Tempat Penelitian	<b>Laboratorium Biokimia Fakultas Kedokteran Universitas Hasanuddin dan RS Universitas Hasanuddin Makassar</b>		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku <b>24 Agustus 2020</b> sampai <b>24 Agustus 2021</b>	Frekuensi review lanjutan
Ketua Komisi Etik Penelitian Kesehatan FKUH	Nama <b>Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)</b>	Tanda tangan	
Sekretaris Komisi Etik Penelitian Kesehatan FKUH	Nama <b>dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)</b>	Tanda tangan	

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapo SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

## 2. Alur penelitian



ADAPTASI SELAMA 7-14 HARI

PERLAKUAN SELAMA 4 PEKAN

( pemberian perlakuan melalui kanula/sonde)

L1 : PEMERIKSAAN PROFIL LIPID KE-1


L2 : PEMERIKSAAN PROFIL LIPID KE-2

L3: PEMERIKSAAN PROFIL LIPID KE-3

PA : TERMINASI DAN PEMERIKSAAN PA



## 3. Sertifikat Hasil Uji Minyak Ayam



**LABORATORIUM BIOTEKNOLOGI TERPADU PETERNAKAN**  
**FAKULTAS PETERNAKAN**  
**UNIVERSITAS HASANUDDIN**  
 Alamat: Jl. Perintis Kemerdekaan KM. 10 Tamalanrea, Makassar  
 Email: labbioternakfapetuh@gmail.com

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**SERTIFIKAT HASIL UJI**  
 No.: 102/T/LBTK-UH/XI/2020

**Informasi Pelanggan**

Nama Perusahaan/Pelanggan : Andi Asda Astiah  
 Alamat Lengkap : Prodi Ilmu Biomedik Pascasarjana UH  
 No. Telp./faks./e-mail : 081364308367  
 Personel Penghubung : -

**Informasi Sampel**

No. Identitas Laboratorium : RT 2009099  
 Uraian/Matriks Sampel : Bahan Segar / Minyak  
 Kondisi Saat Diterima : Baik  
 Tanggal Diterima : 07/09/2020  
 Tanggal Pengujian : 14/09/2020  
 Tujuan Pengujian : Penelitian

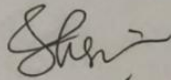
**Informasi Hasil Pengujian Asam Lemak**

No	Komposisi Asam Lemak	Hasil Sampel Minyak 1 (%)
1.	Caprylic acid, C8:0	0.09
2	Lauric Acid, C12:0	1.18
3	Myristic Acid, C14:0	2.49
4	Pentadecanoic Acid, C15:0	0.21
5	Palmitic Acid, C16:0	16.90
6	Palmitoleic Acid, C16:1	21.64
7	Heptadecanoic Acid, C17:0	0.25
8	Cis-10-Heptadecanoic Acid, C17:1	0.27
9	Stearic Acid, C18:0	19.36
10	Oleic Acid, C18:1n9c	6.54


Acuan Metode Pengujian :

- Folch,dkk (1957) J.Biol.Chem.226:497-509 (Ekstraksi Minyak)
- AOAC (2012) Official Method 969.33 (Preparation of Methyl Ester BF3 Method : GC-FID)

Makassar, 18 September 2020  
 Devisi Teknis,

  
Dr. Muhammad Ihsan A. Dagong, S.Pt, M.Si  
 NIP.: 197705262002121003

## 4. Sertifikat Hasil Uji Minyak Kelapa


**LABORATORIUM BIOTEKNOLOGI TERPADU PETERNAKAN**  
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**UNIVERSITAS HASANUDDIN**  
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 Email: labbioternakfapetuh@gmail.com

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**SERTIFIKAT HASIL UJI**  
No.: 102/T/LBTK-UH/XI/2020

**Informasi Pelanggan**

Nama Perusahaan/Pelanggan : Andi Asda Astiah  
 Alamat Lengkap : Prodi Ilmu Biomedik Pascasarjana UH  
 No. Telp./faks./e-mail : 081364308367  
 Personel Penghubung : -

**Informasi Sampel**

No. Identitas Laboratorium : RT 2009099  
 Uraian/Matriks Sampel : Bahan Segar / Minyak  
 Kondisi Saat Diterima : Baik  
 Tanggal Diterima : 07/09/2020  
 Tanggal Pengujian : 14/09/2020  
 Tujuan Pengujian : Penelitian

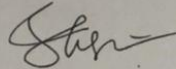
**Informasi Hasil Pengujian Asam Lemak**

No	Komposisi Asam Lemak	Hasil Sampel Minyak 2 (%)
1.	caproic acid, C6:0	2.94
2	Caprilic acid, C8:0	18.91
3	Capric acid, C10:0	12.88
4	Lauric Acid, C12:0	0.09
5	Myristic Acid, C14:0	20.53
6	Palmitic Acid, C16:0	17.15
7	Stearic Acid, C18:0	6.43
8	Oleic Acid, C18:1n9c	6.63
9	Linoleic Acid, C18:2n6c	2.33


Acuan Metode Pengujian :

- Folch,dkk (1957) J.Biol.Chem.226:497-509 (Ekstraksi Minyak)
- AOAC (2012) Official Method 969.33 (Preparation of Methyl Ester BF3 Method : GC-FID)

Makassar, 18 September 2020  
Devisi Teknis,

  
Dr. Muhammad Ihsan A. Dagong, S.Pt, M.Si  
 NIP.: 197705262002121003

## 5. Sertifikat hasil uji minyak sawit



**LABORATORIUM BIOTEKNOLOGI TERPADU PETERNAKAN**  
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**UNIVERSITAS HASANUDDIN**  
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 Email: labbioternakfapetuh@gmail.com

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**SERTIFIKAT HASIL UJI**  
 No.: 102/T/LBTK-UH/XI/2020

**Informasi Pelanggan**

Nama Perusahaan/Pelanggan : Andi Asda Astiah  
 Alamat Lengkap : Prodi Ilmu Biomedik Pascasarjana UH  
 No. Telp./faks./e-mail : 081364308367  
 Personel Penghubung : -

**Informasi Sampel**

No. Identitas Laboratorium : RT 2009099  
 Uraian/Matriks Sampel : Bahan Segar / Minyak  
 Kondisi Saat Diterima : Baik  
 Tanggal Diterima : 07/09/2020  
 Tanggal Pengujian : 14/09/2020  
 Tujuan Pengujian : Penelitian

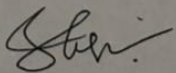
**Informasi Hasil Pengujian Asam Lemak**

No	Komposisi Asam Lemak	Hasil Sampel Minyak 3 (%)
1.	Lauric Acid, C12:0	2.38
2	Myristic Acid, C14:0	3.02
3	Palmitic Acid, C16:0	16.08
4	Stearic Acid, C18:0	12.14
5	Oleic Acid, C18:1n9c	6.55
6	Linoleic Acid, C18:2n6c	22.03
7	Arachidic Acid, C20:0	1.10
8	Linolenic Acid, C18:3n3	0.31

Acuan Metode Pengujian :

1. Folch, dkk (1957) J. Biol. Chem. 226:497-509 (Ekstraksi Minyak)
2. AOAC (2012) Official Method 969.33 (Preparation of Methyl Ester BF3 Method : GC-FID)

Makassar, 18 September 2020  
 Devisi Teknis,



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## 6. Penentuan dosis intervensi

- Dosis minyak yang digunakan pada semua kelompok disetarakan dengan 30 g atau 30.000 mg asupan minyak pada manusia.
- Untuk mengonversi ke dosis pada tikus, dilakukan penentuan dosis menggunakan metode *Reagan-Shaw* dengan rumus:

$$\text{HED} = \text{Dosis pada Hewan} \left( \frac{\text{mg}}{\text{kg/bb}} \right) \times \frac{\text{Faktor Km Tikus}}{\text{Faktor Km Manusia}}$$

- Besar asupan minyak goreng pada manusia (Human Equivalent Dosage-HED) yaitu 30.000 mg minyak dibagi 60 kg BB, yaitu sebesar 500. Faktor konstanta (Km) pada tikus adalah 6, dan faktor konstanta pada manusia dewasa adalah 37, sehingga dosis pada tikus yaitu 3083 mg/kg. Rata-rata tikus yang digunakan seberat 280 g sehingga dosis digunakan sebesar 863 mg/ekor atau setara dengan 0,9 ml/ekor dibulatkan 1 ml/ekor.

## 7. Tabulasi data ( Kadar profil lipid )

TRIGLISERIDA (mg/dL)	MINYAK AYAM			MINYAK KELAPA		
	SEB	SET2	SET4	SEB	SET2	SET4
	47.01	53.36	51.49	50.37	50.75	89.55
	79.85	92.54	164.55	42.91	104.10	101.12
	36.94	62.69	113.43	35.45	80.22	61.94
	76.49	102.99	108.21	33.21	72.76	100.00
	43.28	91.79	125.37	62.31	82.09	88.06
RATA-RATA	<b>56.72</b>	<b>80.67</b>	<b>112.61</b>	<b>44.85</b>	<b>77.99</b>	<b>88.13</b>

MINYAK SAWIT			KONTROL		
SEB	SET2	SET4	SEB	SET2	SET4
40.67	52.24	64.93	68.7	86.7	34.7
57.84	119.78	98.13	69.6	86.5	66.5
29.85	86.57	111.19	66.1	44.6	55.7
33.96	57.46	77.61	86.3	60.3	36.8
66.04	114.55	111.57	36.1	55.1	50.1
<b>45.67</b>	<b>86.12</b>	<b>92.69</b>	<b>65.36</b>	<b>66.64</b>	<b>48.76</b>

KOLESTEROL TOTAL (mg/dL)	MINYAK AYAM			MINYAK KELAPA		
	SEB	SET2	SET4	SEB	SET2	SET4
	81.95	59.86	56.77	94.06	84.56	64.85
	78.62	89.79	68.65	87.41	61.05	66.27
	79.33	83.61	56.77	91.92	91.45	69.83
	84.80	105.70	64.37	80.05	97.62	63.90
	88.60	94.54	64.37	78.62	84.32	69.60
RATA-RATA	<b>82.66</b>	<b>86.70</b>	<b>62.19</b>	<b>86.41</b>	<b>83.80</b>	<b>66.89</b>

MINYAK SAWIT				KONTROL		
SEB	SET2	SET4		SEB	SET2	SET4
84.32	58.91	55.82		103.2	105.20	76.80
81.00	62.95	60.57		80.7	79.70	94.80
86.46	53.68	54.39		66	67.70	78.90
75.53	75.06	62.95		103	103.50	88.20
91.69	87.17	67.93		68.56	71.06	64.46
<b>83.80</b>	<b>67.55</b>	<b>60.33</b>		<b>84.29</b>	<b>85.43</b>	<b>80.63</b>

LDL (mg/dL)	MINYAK AYAM			MINYAK KELAPA		
	SEB	SET2	SET4	SEB	SET2	SET4
	7.13	1.07	0.83	9.26	5.46	1.07
	8.79	2.49	2.02	9.74	2.97	2.49
	8.79	4.51	0.83	8.55	5.94	3.56
	7.84	3.09	1.66	6.65	3.21	1.90
	9.50	3.33	1.31	8.08	2.38	0.83
RATA-RATA	<b>8.41</b>	<b>2.90</b>	<b>1.33</b>	<b>8.46</b>	<b>3.99</b>	<b>1.97</b>

MINYAK SAWIT			KONTROL		
SEB	SET2	SET4	SEB	SET2	SET4
5.94	1.19	0.59	10.6	9.1	8.8
9.74	1.31	0.71	8.7	6	8.8
8.08	1.66	2.38	6.4	7.3	6.6
8.55	5.58	2.02	9.2	7.3	8
6.89	5.23	3.80	6.9	5.1	4.9
<b>7.84</b>	<b>2.99</b>	<b>1.90</b>	<b>8.36</b>	<b>6.96</b>	<b>7.42</b>

	MINYAK AYAM			MINYAK KELAPA		
	SEB	SET2	SET4	SEB	SET2	SET4
<b>HDL</b>						
<b>(mg/dL)</b>	35.16	22.28	21.74	26.84	27.38	24.69
	31.67	22.55	30.33	20.40	21.20	24.96
	24.96	21.20	21.20	37.31	43.48	26.04
	31.67	29.52	23.89	23.89	20.13	25.77
	31.67	20.67	30.33	22.55	30.33	22.01
RATA-RATA	<b>31.03</b>	<b>23.24</b>	<b>25.50</b>	<b>26.20</b>	<b>28.50</b>	<b>24.69</b>

MINYAK SAWIT			KONTROL		
SEB	SET2	SET4	SEB	SET2	SET4
24.96	24.69	20.13	28.4	34.8	34.5
26.30	28.99	23.62	27.8	31.3	36.6
27.11	20.94	19.59	24.85	26.45	33.4
26.04	26.04	22.28	32	32	31.5
28.45	32.21	26.84	26.6	27.4	30.05
<b>26.57</b>	<b>26.57</b>	<b>22.49</b>	<b>27.93</b>	<b>30.39</b>	<b>33.21</b>