

Lampiran 1 Hasil Determinasi



**LEMBAGA ILMU PENGETAHUAN INDONESIA
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PUSAT PENELITIAN BIOLOGI
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Cibinong, November 2018

Nomor : 442/11PH.1.01/11.07/XI/2018
Lampiran :
Perihal : Hasil identifikasi/determinasi Tumbuhan

Kepada Yth.
Bpk./Ibu/Sdr(i). **Pabrik Obat Tradisional (HERBAL)**
Jl. Soekarno Hatta No.84
Kel.Bukit Baru Kec.Illir Barat 1 Palembang

Dengan hormat,

Bersama ini kami sampaikan hasil identifikasi/determinasi tumbuhan yang Saudara kirimkan ke "Herbarium Bogoriense", Bidang Botani Pusat Penelitian Biologi-LIPI Bogor, adalah sebagai berikut :

No.	No. Kol.	Jenis	Suku
1	Kayu Manis Yang Ada Buah	<i>Cinnamomum burmanni</i> (Nees & T.Nees) Blume	Lauraceae
2	Kayu Manis	<i>Cinnamomum burmanni</i> (Nees & T.Nees) Blume	Lauraceae
3	Gaharu Daun Lancip	<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae
4	Gendarusa Ungu	<i>Justicia gendarussa</i> Burm.f.	Acanthaceae
5	Gendarusa Putih	<i>Justicia gendarussa</i> Burm.f.	Acanthaceae
6	Gaharu Tanam dari Kebun	<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae
7	Gaharu Hutan Liar	<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae

Demikian, semoga berguna bagi Saudara.

Kepala Bidang Botani
Pusat Penelitian Biologi-LIPI,

[Signature]
Dr. Joeni Setijo Rahajoe
NIP. 196706241993032004

Lampiran 2 Alur Penelitian



Lampiran 3 Perhitungan Rendemen Ekstrak dan Fraksi

1. Ekstrak

Jumlah ekstrak kental = 256,3 gram

$$\begin{aligned}\text{Rendemen} &= \frac{\text{ekstrak kental}}{\text{bobot simplisia}} \times 100 \% \\ &= \frac{256,3 \text{ gram}}{300 \text{ gram}} \times 100 \% \\ &= 8,57 \%\end{aligned}$$

2. Fraksi Metanol : Air

$$\begin{aligned}\text{Rendemen} &= \frac{\text{bobot fraksi}}{\text{bobot ekstrak}} \times 100 \% \\ &= \frac{120,53 \text{ gram}}{200 \text{ gram}} \times 100 \% \\ &= 60,265 \%\end{aligned}$$

3. Fraksi Etil Asetat

$$\begin{aligned}\text{Rendemen} &= \frac{\text{bobot fraksi}}{\text{bobot ekstrak}} \times 100 \% \\ &= \frac{24,92 \text{ gram}}{200 \text{ gram}} \times 100 \% \\ &= 12,46 \%\end{aligned}$$

4. Fraksi N-heksan

$$\begin{aligned}\text{Rendemen} &= \frac{\text{bobot fraksi}}{\text{bobot ekstrak}} \times 100 \% \\ &= \frac{40,52 \text{ gram}}{200 \text{ gram}} \times 100 \% \\ &= 20,26 \%\end{aligned}$$

Lampiran 4 Gambar dan Perhitungan Karakterisasi Simplisia

1. Kadar Abu Total



a. Krus 1

Krus kosong = 63,1872 gram

Krus isi = 63,2646 gram

Krus isi – Krus kosong = 63,2646 – 63,1872 = 0,0774 gram

Berat Simplisia = 2,0206 gram

$$\begin{aligned}\text{Kadar Abu Total} &= \frac{\text{Berat abu sisa pijar}}{\text{Berat simplisia}} \times 100\% \\ &= \frac{0,0774 \text{ gram}}{2,0206 \text{ gram}} \times 100 \% \\ &= 3,8305 \%\end{aligned}$$

b. Krus 2

Krus kosong = 43,1417 gram

Krus isi = 43,2235 gram

Krus isi – Krus kosong = 43,2235 – 43,1417 = 0,0818 gram

Berat Simplisia = 2,0424 gram

$$\text{Kadar Abu Total} = \frac{\text{Berat abu sisa pijar}}{\text{Berat simplisia}} \times 100\%$$

$$= \frac{0,0818 \text{ gram}}{2,0424 \text{ gram}} \times 100 \%$$

$$= 4,0050 \%$$

- Kadar rata-rata abu total

$$\frac{3,8305\% + 4,0050\%}{2} = 3,92\%$$

2. Kadar Abu Tidak Larut Asam



a. Krus 1

$$\text{Krus kosong} = 63,1872 \text{ gram}$$

$$\text{Krus isi} = 63,2115 \text{ gram}$$

$$\text{Krus isi} - \text{Krus kosong} = 63,2115 - 63,1872 = 0,0243 \text{ gram}$$

$$\text{Berat Simplisia} = 2,0206 \text{ gram}$$

$$\text{Kadar Abu Total} = \frac{\text{Berat abu tidak larut asam}}{\text{Berat simplisia}} \times 100\%$$

$$= \frac{0,0243 \text{ gram}}{2,0206 \text{ gram}} \times 100 \%$$

$$= 1,2026 \%$$

b. Krus 2

$$\text{Krus kosong} = 43,1417 \text{ gram}$$

$$\text{Krus isi} = 43,1648 \text{ gram}$$

$$\text{Krus isi} - \text{Krus kosong} = 43,1648 - 43,1417 = 0,0231 \text{ gram}$$

Berat Simplisia = 2,0424 gram

$$\begin{aligned}\text{Kadar Abu Total} &= \frac{\text{Berat abu sisa pijar}}{\text{Berat simplisia}} \times 100\% \\ &= \frac{0,0231 \text{ gram}}{2,0424 \text{ gram}} \times 100 \% \\ &= 1,1310 \%\end{aligned}$$

- Kadar rata-rata abu total tidak larut asam

$$\frac{1,2026 \% + 1,1310 \%}{2} = 1,17\%$$

3. Kadar Sari Larut Etanol



a. Cawan 1

Berat kosong = 62,3901 gram

Berat isi = 62,4360 gram

Berat sari kering = 62,4360 – 62,3901 = 0,0459 gram

Berat Simplisia = 2,5003 gram

Volume pelarut = 50 mL

Volume filtrat = 10 mL

$$\text{Kadar sari} = \frac{\text{berat sari kering}}{\text{berat simplisia}} \times \frac{\text{vol pelarut}}{\text{vol filtrat}} \times 100\%$$

$$\begin{aligned}\text{Kadar sari} &= \frac{0,0459 \text{ g}}{2,5003 \text{ g}} \times \frac{50 \text{ mL}}{10 \text{ mL}} \times 100\% \\ &= 9,1788 \%\end{aligned}$$

b. Cawan 2

Berat kosong = 27,6003 gram

Berat isi = 27,6471 gram

Berat sari kering = 27,6471 – 27,6003 = 0,0468 gram

Berat Simplisia = 2,5010 gram

Volume pelarut = 50 mL

Volume filtrat = 10 mL

$$\text{Kadar sari} = \frac{\text{berat sari kering}}{\text{berat simplisia}} \times \frac{\text{vol pelarut}}{\text{vol filtrat}} \times 100\%$$

$$\begin{aligned} \text{Kadar sari} &= \frac{0,0468 \text{ g}}{2,5010 \text{ g}} \times \frac{50 \text{ mL}}{10 \text{ mL}} \times 100\% \\ &= 9,3562 \% \end{aligned}$$

- Rata- rata kadar sari larut etanol

$$\frac{9,1788 \% + 9,3562 \%}{2} = 9,2675$$

4. Kadar Sari Larut Air



a. Cawan 1

Berat kosong = 62,3966 gram

Berat isi = 62,4417 gram

Berat sari kering = 62,4417 – 62,3966 = 0,0451 gram

Berat Simplisia = 2,5058 gram

Volume pelarut = 50 mL

Volume filtrat = 10 mL

$$\text{Kadar sari} = \frac{\text{berat sari kering}}{\text{berat simplisia}} \times \frac{\text{vol pelarut}}{\text{vol filtrat}} \times 100\%$$

$$\begin{aligned}\text{Kadar sari} &= \frac{0,0451 \text{ g}}{2,5058 \text{ g}} \times \frac{50 \text{ mL}}{10 \text{ mL}} \times 100\% \\ &= 8,9991 \%\end{aligned}$$

a. Cawan 2

Berat kosong = 34,5960 gram

Berat isi = 34,6406 gram

Berat sari kering = 34,6406 – 34,5960 = 0.0446 gram

Berat Simplisia = 2,5026 gram

Volume pelarut = 50 mL

Volume filtrat = 10 mL

$$\text{Kadar sari} = \frac{\text{berat sari kering}}{\text{berat simplisia}} \times \frac{\text{vol pelarut}}{\text{vol filtrat}} \times 100\%$$

$$\begin{aligned}\text{Kadar sari} &= \frac{0,0446 \text{ g}}{2,5026 \text{ g}} \times \frac{50 \text{ mL}}{10 \text{ mL}} \times 100\% \\ &= 8,9107 \%\end{aligned}$$

• Rata- rata kadar sari larut etanol

$$\frac{8,9991 \% + 8,9107 \%}{2} = 8,9549$$

b. Susut Pengeringan



a



b

- a. Penetapan Susut Pengeringan = 9,78 %
 b. Penetapan Susut Pengeringan = 13,55 %

c. Bobot jenis ekstrak



a. Bj ekstrak 1

$$W_0 \text{ (piknometer kosong)} = 14,3380 \text{ g}$$

$$W_1 \text{ (piknometer + air)} = 23,8226 \text{ g}$$

$$W_2 \text{ (piknometer + ekstrak)} = 22,7365 \text{ g}$$

$$\begin{aligned} \text{Bobot jenis} &= \frac{W_2 - W_1}{W_1 - W_0} \\ &= \frac{22,7365 \text{ g} - 14,3380 \text{ g}}{23,8226 \text{ g} - 14,3380 \text{ g}} = 0,8855 \text{ g/mL} \end{aligned}$$

b. Bj ekstrak 2

$$W_0 \text{ (piknometer kosong)} = 14,3380 \text{ g}$$

$$W_1 \text{ (piknometer + air)} = 23,8226 \text{ g}$$

$$W_2 \text{ (piknometer + ekstrak)} = 22,7360 \text{ g Bobot jenis} =$$

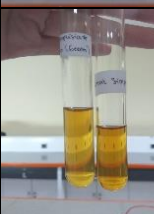
$$\frac{W_2 - W_1}{W_1 - W_0}$$

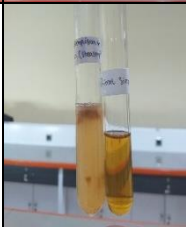
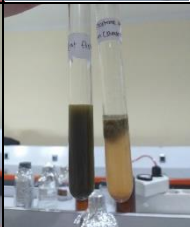
$$= \frac{22,7360 \text{ g} - 14,3380 \text{ g}}{23,8226 \text{ g} - 14,3380 \text{ g}} = 0,8854 \text{ g/mL}$$

- Rata- rata bobot jenis

$$\frac{0,8855 + 0,8854}{2} = 0,8854 \text{ g/mL}$$

Lampiran 5 Hasil Pengamatan Skrining Fitokimia

Golongan	Gambar		Hasil
	Simplisia	Ekstrak	
Alkalod			Simplisia = + Ekstrak = +
Flavonoid			Simplisia = + Ekstrak = +
Kuionon			Simplisia = + Ekstrak = +
Tanin (gelatin)			Simplisia = + Ekstrak = +

Tanin (FeCl₃)			Simplisia = + Ekstrak = +
Tanin (Stearny)			Simplisia = + Ekstrak = +
Saponin			Simplisia = + Ekstrak = +
Steroid/ triterpenoid			Simplisia = + Ekstrak = +

Lampiran 6 Tabel dan Perhitungan Pengujian Aktivitas Sitotoksik

1. Ekstrak

SAMPEL	KONSENTRASI	ABS	RATA"	KONTROL	BLANKO	%V	%I
HE	400	0.752	0.7425	1.078	0.090	66.03105	33.9689504
		0.733					
	200	0.778	0.8395			75.85218	24.1478232
		0.901					
	100	0.857	0.871			79.04151	20.958488
		0.885					
	50	0.945	0.92			84.0027	15.9973
		0.895					
	25	1	0.99			91.09011	8.90988863
		0.98					

Regresi linier konsentrasi dengan % inhibisi :

$$r^2 = 0.9807$$

$$y = 0.0485x + 14.672$$

$$50 = 0.0485x + 14.672$$

$$IC_{50} = \frac{50 - 19.013}{0,0485} = 728.412 \mu\text{g/mL}$$

2. Fraksi metanol air

SAMPEL	KONSENTRASI	ABS	RATA"	KONTROL	BLANKO	%V	%I
HFM	400	1.009	1.0055	1.078	0.09	92.66194	7.338057
		1.002					
	200	0.845	0.865			78.4413	21.5587
		0.885					
	100	0.846	0.9545			87.5	12.5
		1.063					
	50	0.913	0.9865			90.73887	9.261134
		1.06					
	25	1.063	1.035			95.64777	4.352227
		1.007					

Regresi linier konsentrasi dengan % inhibisi :

$$r^2 = 0.9783$$

$$y = 0.0926x + 3.2345$$

$$50 = 0.0926x + 3.2345$$

$$IC_{50} = \frac{50 - 3.2345}{0.0926} = 505.026 \text{ } \mu\text{g/mL}$$

3. Fraksi etil asetat

SAMPEL	KONSENTRAS	ABS	RATA"	KONTROL	BLANKO	% V	% I
HFE	400	0.928	0.969	1.078	0.09	88.96761134	11.03238866
		1.01					
	200	1.004	1.011			93.21862348	6.781376518
		1.018					
	100	0.937	0.951			96.25506073	3.744939271
		0.965					
	50	0.955	0.972			98.3805668	1.619433198
		0.989					
	25	0.904	0.9055			91.64979757	8.350202429
		0.907					

Regresi linier konsentrasi dengan % inhibisi :

$$r^2 = 0,9814$$

$$y = 0.0261x + 0.8933$$

$$50 = 0.0261x + 0.8933$$

$$IC_{50} = \frac{50 - 0.8933}{0,0261} = 1881.482 \mu\text{g/mL}$$

4. Fraksi N-heksan

SAMPEL	KONSENTRASI	ABS	RATA"	KONTROL	BLANKO	% V	% I
HFN	400	0.17	0.1685	1.078	0.09	7.9453441	92.054656
		0.167					
	200	0.548	0.548			46.356275	53.643725
		0.548					
	100	0.646	0.6425			55.921053	44.078947
		0.639					
	50	0.75	0.7685			68.674089	31.325911
		0.787					
	25	0.778	0.772			69.02834	30.97166
		0.766					

Regresi linier konsentrasi dengan % inhibisi :

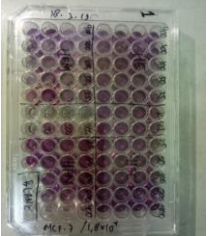
$$r^2 = 0.9863$$

$$y = 0.1606x + 26.08$$

$$50 = 0.1606x + 26.08$$

$$IC_{50} = \frac{50 - 26.08}{0.1606} = 144.458 \text{ } \mu\text{g/mL}$$

Lampiran 7 Alat dan bahan uji Metode MTT assay

		
Penimbangan sampel	Sampel ekstrak dan fraksi etil asetat daun gaharu (<i>Aquilaria malacensis</i>)	Sampel fraksi methanol air dan fraksi N-heksan daun gaharu (<i>Aquilaria malacensis</i>)
		
Centrifuge	Vortex	Waterbath
		
Mikroskop	Hasil MTT	Elisa reader