

## DAFTAR PUSTAKA

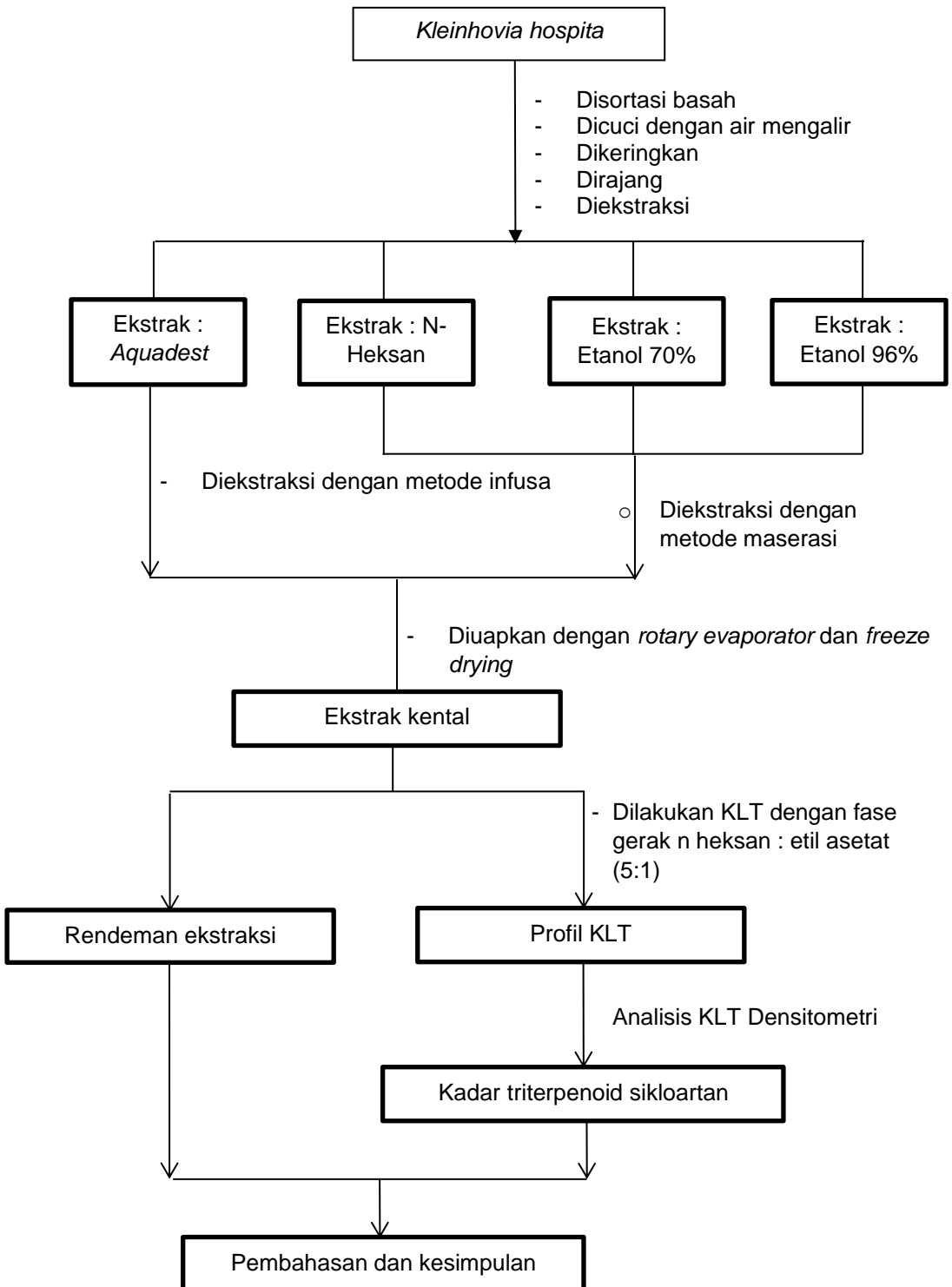
- Achmad, F. H., Aty, W., Arannya, P. D., Nike, F., Lidya, T., dan Indah, S. T. 2014. In vitro antimalarial activity screening of several Indonesian plants using hrp2 assay. *International Journal of Pharmacy and Pharmaceutical Science*, 6, 125-128.
- Armbruster, D., dan Pry, T. 2008. Limit of Blank, Limit of Detection and Limit of Quantitation. *The Clinical Biochemist*, 29 Suppl 1, S49-52.
- Arung, E. T., Kusuma, I. W., Kim, Y. U., Shimizu, K., dan Kondo, R. 2012. Antioxidative compounds from leaves of Tahongai (*Kleinhovia hospita*). *Journal of wood science*, 58(1), 77-80.
- Budiarti, M., dan Jokopriyambodo, W. 2020. Potensi Ekstrak Daun Paliasa (*Kleinhovia hospita*) Sebagai Anti Plasmodium falciparum. *Buletin Penelitian Tanaman Rempah dan Obat*, 31(2), 85-96.
- Clarissa, C., Amir, M., dan Asfirizal, V. 2020. Uji Antibakteri Ekstrak Etanol Daun Tahongai (*Kleinhovia hospita* linn) terhadap Pertumbuhan Bakteri *Actinobacillus actinomycetemcomitans* In-vitro. *Jurnal Kedokteran Mulawarman*, 7(3), 14-22.
- Dirjen Kefarmasian dan Alat Kesehatan. 2017. *Farmakope Herbal Indonesia Edisi II*. Jakarta: kemenkes RI.
- Dirjen Kefarmasian dan Alat Kesehatan. 2020. *Farmakope Indonesia Edisi VI*. Jakarta: kemenkes RI.
- eFloras. 2024. Flora of China. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA. <https://www.efloras>, diakses pada 6 Juli 2024.
- Gaffar I, dan Mamahit LP. 2010. Satu senyawa steroid dari kulit batang tumbuhan paliasa (*Kleinhovia hospita* L.) asal Sulawesi Selatan. *Chem Prog.* 3(1):24-28.
- Gamse, T. 2002. Liquid – Liquid Extraction and Solid – Liquid Extraction. Institute of Thermal Process and environmental Engineering Graz University of Technology.
- Gan, L. S., Ren, G., Mo, J. X., Zhang, X. Y., Yao, W., dan Zhou, C. X. 2009. Cycloartane triterpenoids from *Kleinhovia hospita*. *Journal of natural products*, 72(6), 1102-1105.
- Gunasti, A., & Ardiansyah, V. 2024. Perbandingan Arus Kepadatan Jalan Pada Jalan Mastrip (One Way-Anova). *Journal Of Civil Engineering Building And Transportation*, 8(1), 74-80.

- Heliawati, L. 2018. *Kimia Organik Baham Alam*. Bogor: UNPAK.
- Husna, F., & Mita, S. R. 2020. Identifikasi Bahan Kimia Obat dalam Obat Tradisional Stamina Pria dengan Metode Kromatografi Lapis Tipis. *Farmaka*, 18(2), 16-25.
- Kamarudin, N. A., Markom, M., & Latip, J. 2016. Effects Of Solvents And Extraction Methods on Herbal Plants Phyllanthus niruri, Orthosiphon stamineus and Labisia pumila. *Indian Journal of Science and Technology*, 9(21), 1-5.
- Namir, H., Hadzic, R., Malesevic, I., Jurcevi, M., dan Starcevic, D. en. 2019. Application of thin layer chromatography for qualitative analysis of gunpowder in purpose of life prediction of ammunition. *International Journal of Biosensors & Bioelectronics*, 5(1), 3–12.
- Noer, S. F., dan Ida, N. 2014. Efek Hepatoterapi Kombinasi Infusa Daun Paliasa (*Kleinhovia hospita* Linn) Dengan Daun Sirih Merah (*Piper crocatum* Ruiz & Pav) Berdasarkan Parameter Sgpt Dan Sgot Pada Kelinci Jantan (*Oryctolagus cuniculus*). *Jurnal Farmasi dan Bahan Alam*, 2(1), 9-15.
- Raflizar, R., dan Sihombing, M. 2009. Dekok Daun Paliasa (*Kleinhovia hospita* Linn) Sebagai Obat Radang Hati Akut. *Indonesian Journal of Health Ecology*, 8(2), 78717.
- Rahayu M., Sunarti S., Sulistiarini D., dan Prawiroatmodjo S. 2006. Pemanfaatan Tumbuhan Obat secara Tradisional oleh Masyarakat Lokal di Pulau Wawonii, Sulawesi Tenggara. *Biodiversitas*, 7(3): 245-250.
- Rahim, A., Saito, Y., Miyake, K., Goto, M., Chen, C. H., Alam, G., Natschke, S. M., Lee, K. H dan Nakagawa-Goto, K. 2018. Kleinhospitine E and cycloartane triterpenoids from *Kleinhovia hospita*. *Journal of natural products*, 81(7), 1619-1627.
- Reich, E., dan Blatter, A. 2005. Thin Layer Chromatography. *Encyclopedia of Analytical Science*, 57-66.
- Ridhay, A., Noor, A., Soekamto, N.H., Harlim, T., dan Altena, I.V. 2012. A Stigmasterol Glycoside From The Root Wood of *Melochia umbellata* (Houtt) Stapf var. *degrabrata* K. *Indo. J. Chem.* Vol. 12 (1): 100 – 103.
- Rianse, U., Hamzah, A., Baka, W. K., Buana, T., dan Wunawarsih, I. A. 2023. Pemanfaatan Ekstrak Daun Tanaman Tawandokulo (*Kleinhovia hospita* L.) sebagai Obat Tradisional dalam Menurunkan Gula Darah: Bahasa Indonesia. *Jurnal Pengembangan Inovasi dan Pembangunan Masyarakat*, 1(1), 12-18.
- Rukmana, R. 2003. *Cabai Jawa*. Kanisius; Jakarta.

- Septiana, E., Umaroh, A., Gangga, E. dan Simanjuntak, P. 2017. Aktivitas Penghambatan Polimerisasi Heme Ekstrak Daun Sembung (*Blumea balsamifera*) sebagai Antimalaria. *Bul Littro*. 28 (1), 29– 36.
- Shelvina, F. T. N., Zakiyah, R., & Bintari, Y. R. 2024. Aktivitas Antiinflamasi Infusa dan Dekokta Rumput Laut Merah (*Gracilaria verrucosa*) Terhadap Penghambatan Denaturasi Protein. *Jurnal Kedokteran Komunitas (Journal of Community Medicine)*, 12(1).
- Tayeb R, Wahyudin E, Alam G, Pakki E, and Lukman L. 2014. *Preclinical study: Hepatoprotective effects of “paliasa tea bag” on paracetamol-induced liver damage in rats. in The 2nd International on Naturopathic Medicine.*
- United States Department of Agriculture (USDA). 2023. *Kleinhovia hospita* L. <https://www.usda.gov/> diakses 20 Maret 2024.
- Wahyuni, A.S., Prasetyo, L.B., dan Zuhud, E.A.M. 2017. Population and Distribution Plant Pattern Paliasa (*Kleinhovia hospita* L.) in Bontobahari District. *Media Konservasi*, 22(1), 1n 1-18.
- Wulandari, L., 2011. *Kormatografi Lapis Tipis*. PT. Taman Kampus Presindo: Jember.
- Zhou, C. X., Zou, L., Gan, L. S., dan Cao, Y. L. 2013. Kleinhospitines A-D, new cycloartane triterpenoid alkaloids from *Kleinhovia hospita*. *Organic letters*, 15(11), 2734-2737.

## LAMPIRAN

Lampiran 1. Skema kerja



## Lampiran 2. Determinasi tumbuhan



**LABORATORIUM FARMAKOGNOSI**  
**FAKULTAS FARMASI**  
**UNIVERSITAS HASANUDDIN**  
 KAMPUS UNHAS TAMALANREA, JL. PERINTIS KEMERDEKAAN KM 10  
 Telp. 0411-588566, 586200, 580216, Ext.1093, Fax. (0411)585188,  
 MAKASSAR 90245

No : 028/SKIT/Farmakognosi/VII/2024  
 Lampiran : -  
 Hal : Hasil Identifikasi Tanaman

Kepada Yth.  
**Nur Aidah Nurman (N011201074)**  
 Fakultas Farmasi  
 Universitas Hasanuddin

Dengan Hormat,

Bersama ini, kami sampaikan hasil identifikasi Daun Paliasa (*Kleinhovia hospita* L.) yang saudara kirimkan. Identifikasi dilakukan oleh Kepala Laboratorium Farmakognosi Fakultas Farmasi Universitas Hasanuddin dengan hasil sebagai berikut:

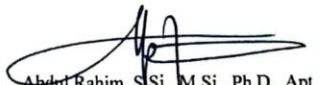
Kingdom : Plantae  
 Divisi : Spermatophyta  
 Sub Divisi : Angiospermae  
 Kelas : Dicotyledonae  
 Ordo : Malvales  
 Famili : Malvaceae  
 Genus : *Kleinhovia*  
 Spesies : *Kleinhovia hospita* L.

Kunci determinasi : 94. Malvaceae, 1b..., 6a..., 7b..., 9b (14. Kleinhovia).  
 Jenis : 1. *Kleinhovia hospita* L.

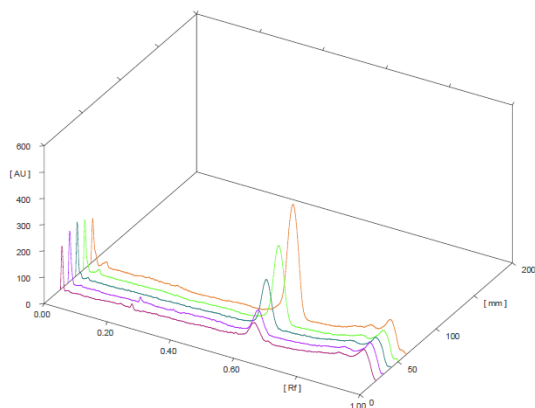
Sumber pustaka :

1. Backer, C.A., and Van De Brink, R.C.B. 1963. Flora of Java (Spermatophytes Only). 1963.
2. <http://www.theplantlist.org/tpl/record/tro-30401419>

Makassar, 30 Juli 2024  
 Kepala Laboratorium Farmakognosi

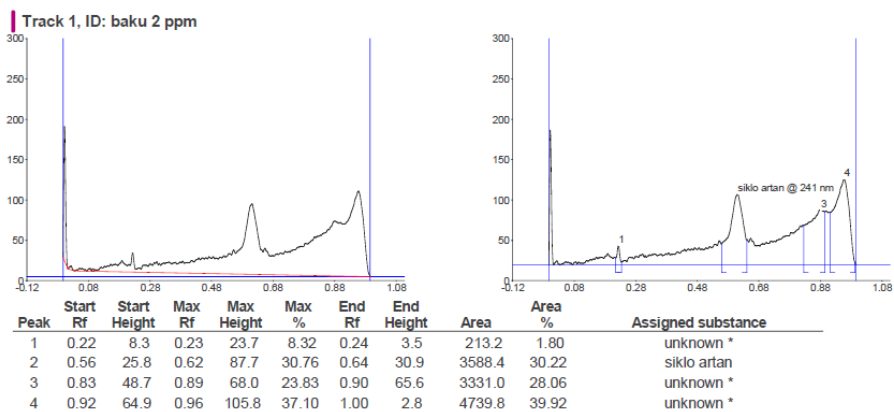
  
 Abdul Rahim, S.Si., M.Si., Ph.D., Apt  
 NIP. 197711112008121001

**Lampiran 3. Hasil densitogram KLT-densitometer senyawa pembanding triterpenoid sikloartan dan beberapa ekstrak *K.hospita***  
**Lampiran 3.1 Kurva pembanding**

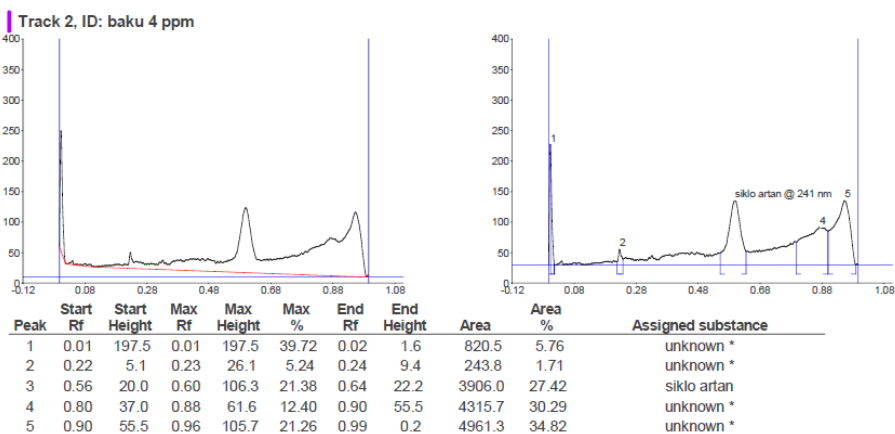


**Gambar 8. Densitogram kurva pembanding triterpenoid sikloartan**

**Baku 2  $\mu$ L**

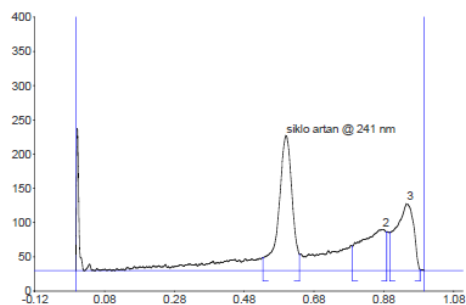
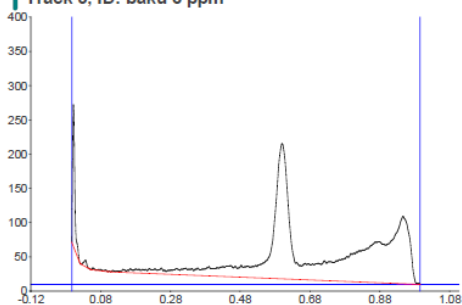


**Baku 4  $\mu$ L**



## Baku 8 µL

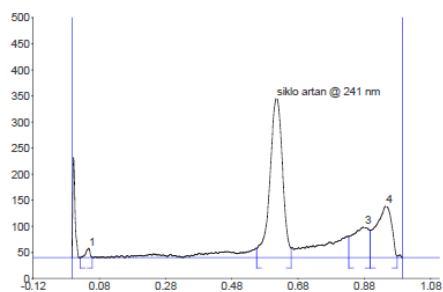
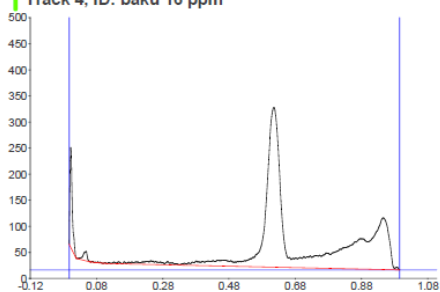
Track 3, ID: baku 8 ppm



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.54	19.2	0.60	197.3	55.38	0.64	23.6	7147.6	45.13	siklo artan
2	0.79	35.6	0.88	60.4	16.95	0.89	56.4	4002.7	25.27	unknown *
3	0.90	55.6	0.95	98.5	27.67	0.99	1.5	4686.6	29.59	unknown *

## Baku 16 µL

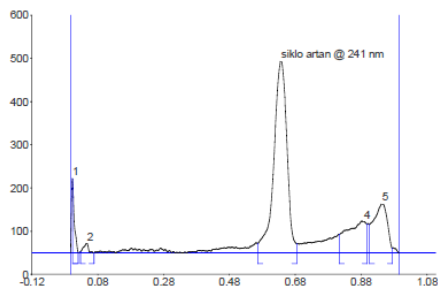
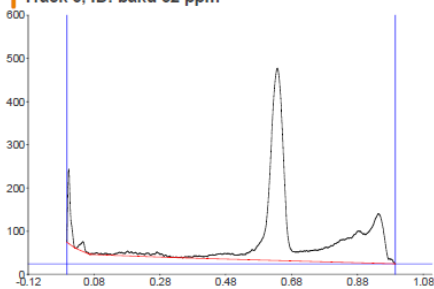
Track 4, ID: baku 16 ppm



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.02	0.3	0.05	18.2	3.78	0.06	1.3	217.1	1.19	unknown *
2	0.56	18.2	0.62	306.5	63.56	0.66	18.4	10999.5	60.06	siklo artan
3	0.84	40.7	0.89	58.4	12.11	0.90	52.5	2712.6	14.81	unknown *
4	0.90	52.6	0.95	99.1	20.56	0.98	3.0	4386.0	23.95	unknown *

**Baku 32 µL**

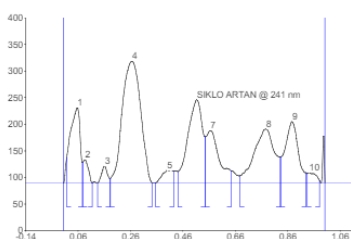
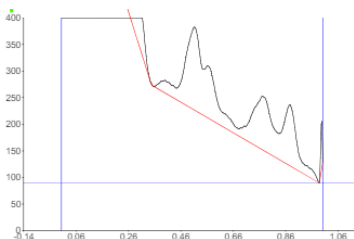
Track 5, ID: baku 32 ppm



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	172.2	0.01	172.2	20.79	0.02	1.1	915.9	3.45	unknown *
2	0.03	2.9	0.05	22.5	2.72	0.07	0.0	309.9	1.17	unknown *
3	0.57	22.2	0.64	445.4	53.78	0.69	21.3	16680.4	62.83	siklo artan
4	0.82	43.2	0.89	73.7	8.90	0.90	66.4	4123.2	15.53	unknown *
5	0.91	65.8	0.95	114.4	13.81	0.98	10.3	4518.7	17.02	unknown *

**Lampiran 2.2 Kromatogram Beberapa Ekstrak *K.hospita***

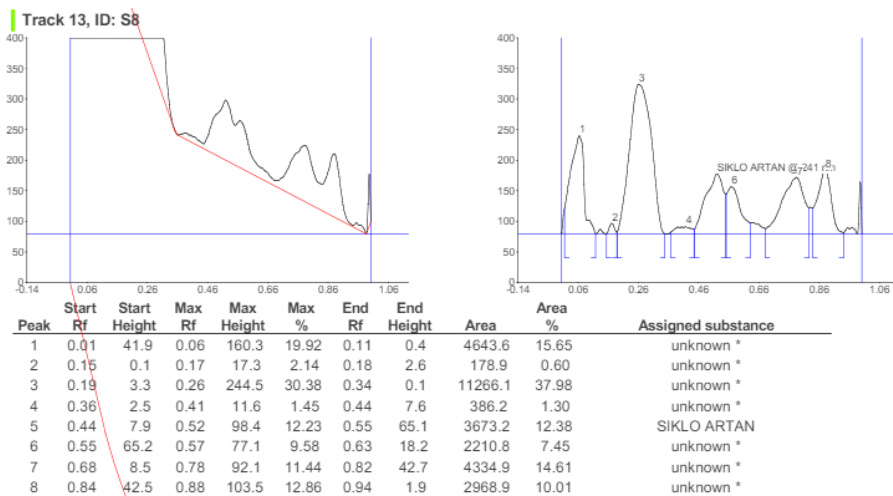
**a. Kromatogram ekstrak etanol 96%  
Replikasi 1**



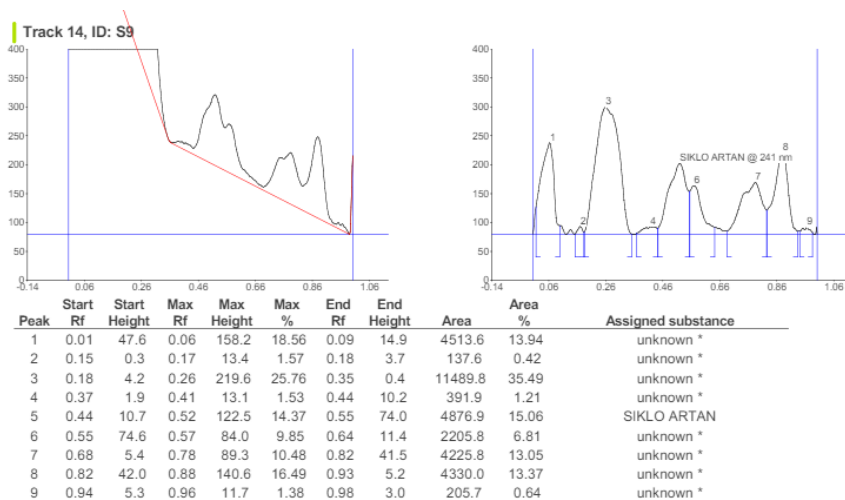
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	47.9	0.05	141.5	14.74	0.07	38.1	3373.4	10.20	unknown *
2	0.07	39.0	0.08	43.5	4.53	0.11	0.4	557.4	1.69	unknown *
3	0.13	0.1	0.16	32.1	3.35	0.18	7.9	439.2	1.33	unknown *
4	0.18	8.3	0.26	228.4	23.79	0.34	0.3	10249.3	31.00	unknown *
5	0.35	0.4	0.40	23.9	2.49	0.42	21.6	631.0	1.91	unknown *
6	0.44	21.4	0.51	156.2	16.27	0.54	86.4	5543.8	16.77	SIKLO ARTAN
7	0.54	86.8	0.56	98.3	10.24	0.64	22.9	3150.6	9.53	unknown *
8	0.68	13.3	0.78	101.1	10.53	0.83	48.5	5065.1	15.32	unknown *
9	0.83	48.6	0.88	115.2	12.00	0.93	19.0	3640.2	11.01	unknown *
10	0.93	17.6	0.94	19.7	2.06	0.98	4.6	409.1	1.24	unknown *



## Replikasi 2

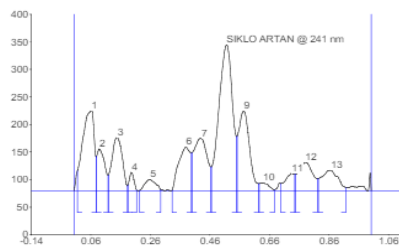
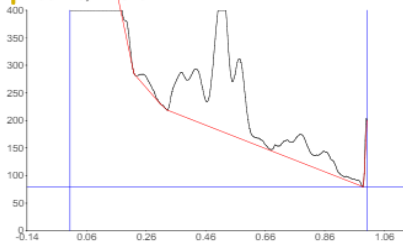


## Replikasi 3



a. Kromatogram ekstrak etanol 70%  
Replikasi 1

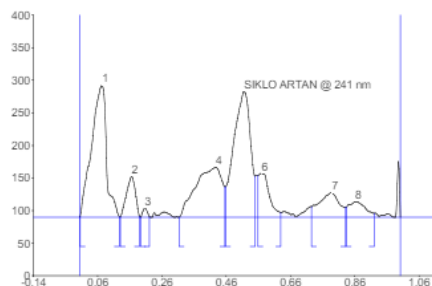
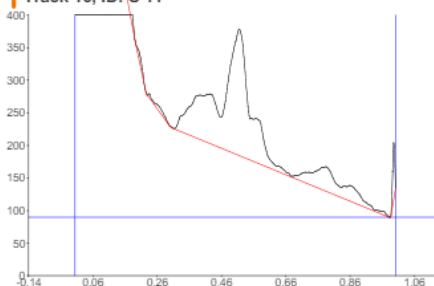
Track 15, ID: S10



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	36.1	0.06	145.6	13.37	0.07	61.4	3674.4	13.26	unknown *
2	0.08	63.2	0.09	75.8	6.96	0.11	27.6	1260.7	4.55	unknown *
3	0.12	28.5	0.14	96.6	8.87	0.18	9.1	2167.7	7.82	unknown *
4	0.18	10.7	0.19	33.4	3.06	0.21	1.0	332.3	1.20	unknown *
5	0.22	0.4	0.26	20.3	1.86	0.29	1.7	477.2	1.72	unknown *
6	0.33	0.7	0.38	79.0	7.26	0.39	68.3	2021.7	7.30	unknown *
7	0.40	68.9	0.43	94.8	8.70	0.46	43.2	2742.7	9.90	unknown *
8	0.46	43.3	0.51	264.7	24.31	0.55	98.1	7818.2	28.22	SIKLO ARTAN
9	0.55	99.0	0.57	144.3	13.25	0.62	12.9	3412.0	12.32	unknown *
10	0.62	13.0	0.64	14.1	1.30	0.67	1.6	281.0	1.01	unknown *
11	0.70	13.0	0.73	31.5	2.90	0.74	29.9	626.8	2.26	unknown *
12	0.74	30.1	0.78	51.4	4.72	0.82	22.1	1596.4	5.76	unknown *
13	0.82	22.0	0.86	37.4	3.43	0.91	5.7	1294.3	4.67	unknown *

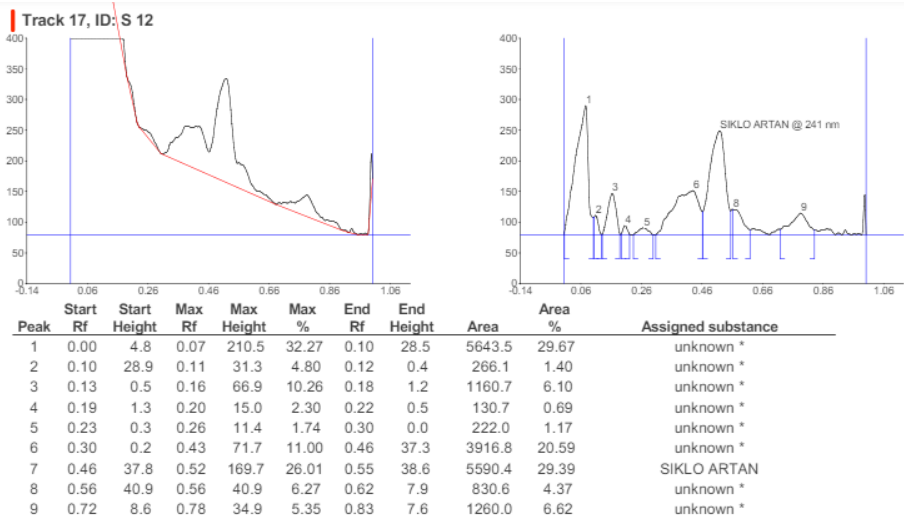
Replikasi 2

Track 16, ID: S 11

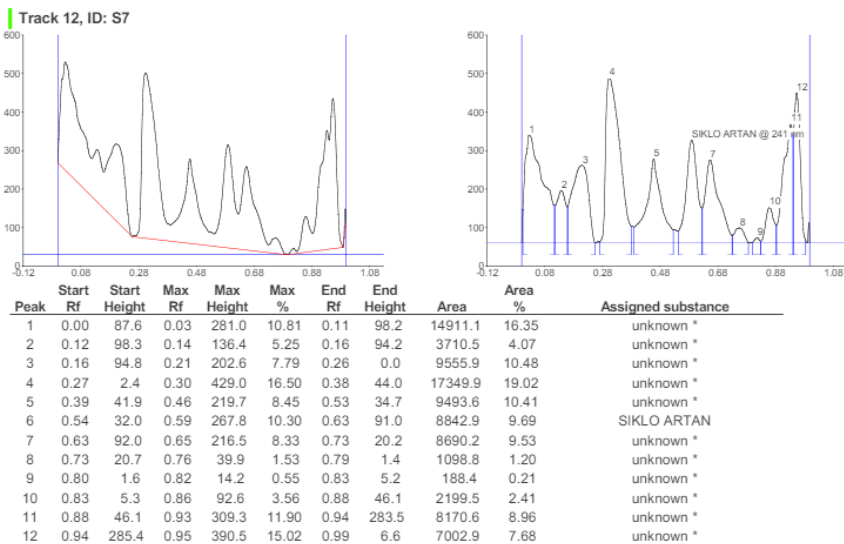


Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.00	1.7	0.07	202.3	29.87	0.12	0.9	6009.3	27.83	unknown *
2	0.13	0.4	0.16	62.2	9.19	0.19	1.0	1108.3	5.13	unknown *
3	0.19	0.3	0.20	13.5	2.00	0.22	0.4	122.5	0.57	unknown *
4	0.31	0.1	0.42	76.5	11.29	0.45	46.7	4028.5	18.66	unknown *
5	0.45	46.7	0.51	193.6	28.57	0.55	63.2	6484.2	30.03	SIKLO ARTAN
6	0.56	64.1	0.57	67.6	9.98	0.63	7.5	1502.7	6.96	unknown *
7	0.72	16.2	0.79	37.6	5.55	0.83	15.4	1522.9	7.05	unknown *
8	0.83	15.5	0.86	24.1	3.55	0.92	6.2	812.9	3.77	unknown *

### Replikasi 3

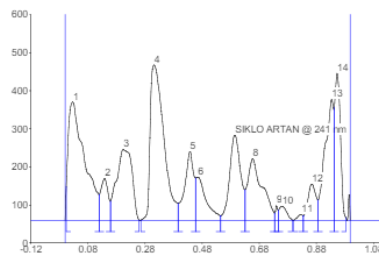
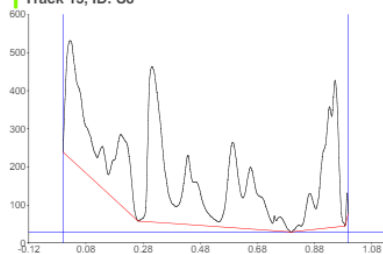


### b. Kromatogram ekstrak n-heksan Replikasi 1



## Replikasi 2

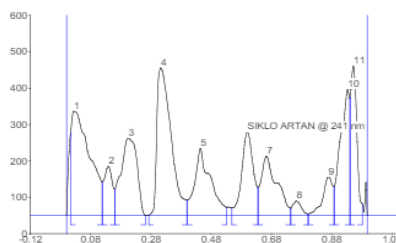
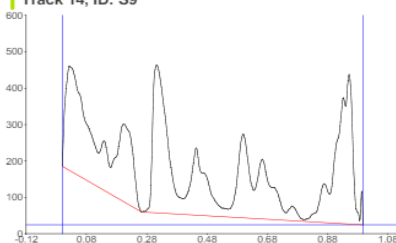
Track 13, ID: S8



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.00	88.9	0.03	310.7	12.02	0.12	67.6	14953.0	18.15	unknown *
2	0.12	68.9	0.14	110.0	4.26	0.16	50.0	2383.2	2.89	unknown *
3	0.16	51.2	0.20	186.3	7.21	0.26	0.6	8499.0	10.32	unknown *
4	0.27	0.2	0.31	407.8	15.78	0.40	44.3	16189.9	19.65	unknown *
5	0.40	44.4	0.44	181.8	7.04	0.46	111.3	4786.6	5.81	unknown *
6	0.46	111.3	0.47	113.7	4.40	0.54	12.1	3452.0	4.19	unknown *
7	0.55	12.3	0.60	223.4	8.65	0.63	80.3	7193.9	8.73	SIKLO ARTAN
8	0.63	80.7	0.66	161.7	6.26	0.73	18.7	6892.1	8.37	unknown *
9	0.74	20.1	0.74	38.6	1.49	0.75	26.3	272.1	0.33	unknown *
10	0.75	27.0	0.76	37.5	1.45	0.80	0.5	808.7	0.98	unknown *
11	0.80	0.1	0.83	14.9	0.58	0.83	12.0	228.5	0.28	unknown *
12	0.84	12.4	0.87	95.2	3.68	0.89	53.3	2266.3	2.75	unknown *
13	0.89	53.3	0.93	317.3	12.28	0.94	291.5	8094.0	9.82	unknown *
14	0.94	297.3	0.95	385.5	14.92	0.98	7.8	6363.6	7.72	unknown *

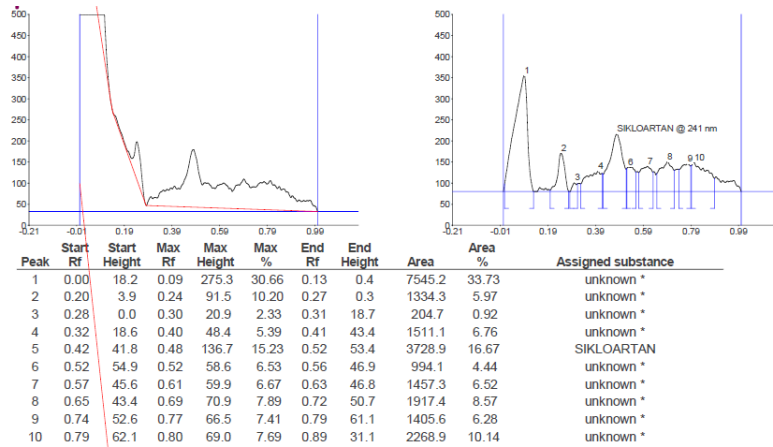
## Replikasi 3

Track 14, ID: S9

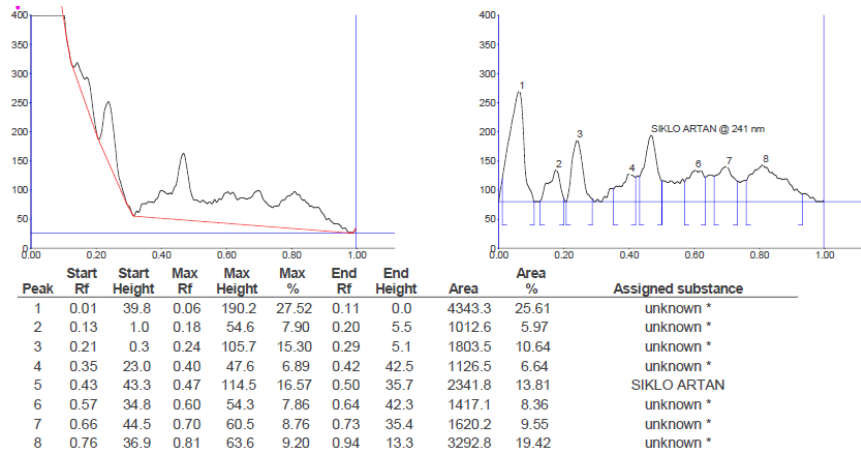


Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	230.1	0.02	287.2	11.36	0.12	92.9	14875.8	17.22	unknown *
2	0.12	93.0	0.14	135.8	5.37	0.16	72.9	3243.9	3.76	unknown *
3	0.16	73.5	0.21	213.8	8.46	0.26	0.3	9594.0	11.11	unknown *
4	0.27	1.7	0.31	406.5	16.08	0.40	43.7	16047.6	18.58	unknown *
5	0.40	43.4	0.45	184.7	7.31	0.53	23.4	8159.4	9.45	unknown *
6	0.55	21.5	0.60	230.0	9.10	0.64	77.8	7450.3	8.63	SIKLO ARTAN
7	0.64	78.0	0.67	164.5	6.51	0.74	21.0	7156.0	8.29	unknown *
8	0.75	21.4	0.76	41.0	1.62	0.80	4.3	1018.8	1.18	unknown *
9	0.80	4.6	0.87	107.2	4.24	0.89	79.5	3026.2	3.50	unknown *
10	0.89	79.9	0.93	346.5	13.70	0.94	322.8	8681.3	10.05	unknown *
11	0.94	325.5	0.95	410.9	16.25	0.98	33.1	7119.1	8.24	unknown *

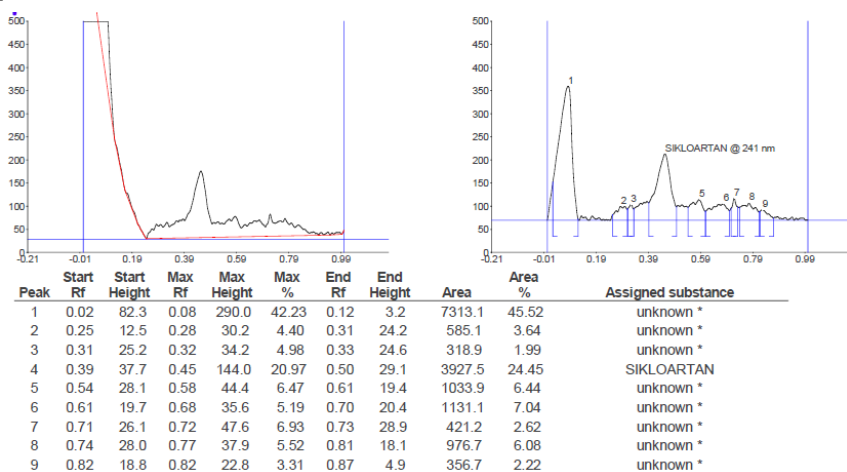
### c. Kromatogram ekstrak aquadest Replikasi 1



### Replikasi 2



### Replikasi 3



**Lampiran 4 Hasil uji statistik kadar triterpenoid sikloartan**

**Lampiran 4.1 Hasil uji One way annova**

<b>ANOVA summary</b>	
<b>F</b>	71.09
<b>P value</b>	<0.0001
<b>P value summary</b>	****
<b>Significant diff. among means (P&lt;0.05)</b>	Yes
<b>R squared</b>	0.9638

**Lampiran 4.2 Hasil uji Turkey's multiple comparisons**

<b>Number of families</b>	1
<b>Number of comparisons per family (P&lt;0.05)</b>	6
<b>Alpha</b>	0.05

**Turkey's multiple comparisons test**

<b>Subject</b>	<b>Mean diff.</b>	<b>95.00% CI of diff.</b>	<b>Below threshold</b>	<b>Summary</b>	<b>Adjusted P Value</b>
Etanol 96% vs Etanol 70%	-0.002667	-0.1399 to 0.1346	No	Ns	>0.9999
Etanol 96% vs N-heksan	-0.4961	-0.6334 to -0.3588	Yes	****	<0.0001
Etanol 96% vs Aquadest	0.04263	-0.09463 to 0.1799	No	Ns	0.7567
Etanol 70% vs N-heksan	-0.4934	-0.6307 to -0.3562	Yes	****	<0.0001
Etanol 70% vs Aquadest	0.04530	-0.09196 to 0.1826	No	Ns	0.7232
N-heksan vs Aquadest	0.5387	0.4015 to 0.6760	Yes	****	<0.0001

**Lampiran 5 Perhitungan**  
**Lampiran 5.1 Perhitungan rendemen**

Pelarut	Replikasi	Berat sampel (g)	Berat ekstrak (g)	Rata-rata berat ekstrak (g)	Rendemen (%b/b)	Rata-rata rendemen (%b/b)	SD
Etanol 96%	1	20	1,1913	1,2557	5,95	6,27	±0,3200
	2	20	1,2578		6,28		
	3	20	1,3181		6,59		
Etanol 70%	1	20	2,0375	2,0772	10,18	10,38	±0,2498
	2	20	2,0617		10,30		
	3	20	2,1323		10,66		
N-heksan	1	20	0,1882	0,1963	0,94	0,99	±0,1136
	2	20	0,2248		1,12		
	3	20	0,1827		0,91		
Aquadest	1	20	2,3312	2,2603	11,65	11,29	±0,7915
	2	20	2,0794		10,39		
	3	20	2,3702		11,85		

**a) Etanol 96%**  
**Replikasi 1**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{1,1913 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 5,95\%$$

**Replikasi 2**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{1,2578 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 6,28\%$$

**Replikasi 3**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{1,3181 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 6,59\%$$

**b) Etanol 70%**  
**Replikasi 1**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,0375 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 10,18\%$$

**Replikasi 2**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,0617 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 10,30\%$$

**Replikasi 3**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,1323 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 10,66\%$$

**c) N-Heksan****Replikasi 1**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{0,1882 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 0,94\%$$

**Replikasi 2**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{0,2248 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 1,12\%$$

**Replikasi 3**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{0,1827 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 0,91\%$$

**d) Aquadest****Replikasi 1**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,3312 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 11,65\%$$

**Replikasi 2**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,0794 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 10,39\%$$



**Replikasi 3**

$$\% \text{ Rendemen} = \frac{\text{Bobot ekstrak (g)}}{\text{Bobot simplisia (g)}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{2,3702 \text{ g}}{20 \text{ g}} \times 100\%$$

$$\% \text{ Rendemen} = 11,85\%$$

**Lampiran 5.2 Perhitungan nilai Rf**

Ekstrak	Replikasi	Nilai Rf
Baku	-	0,64
	1	0,63
Etanol 96%	2	0,61
	3	0,61
	1	0,63
Etanol 70%	2	0,63
	3	0,61
	1	0,61
N-heksan	2	0,61
	3	0,61
	1	0,59
Aquadest	2	0,59
	3	0,59

$$\text{Nilai Rf} = \frac{\text{Jarak yang ditempuh noda}}{\text{jarak yang ditempuh eluen}}$$

$$\text{Baku} = \frac{3,7}{5,7} = 0,64$$

$$\text{A1} = \frac{3,6}{5,7} = 0,63$$

$$\text{A2} = \frac{3,5}{5,7} = 0,61$$

$$\text{A3} = \frac{3,5}{5,7} = 0,61$$

$$\text{B1} = \frac{3,6}{5,7} = 0,63$$

$$\text{B2} = \frac{3,6}{5,7} = 0,63$$

$$\text{B3} = \frac{3,5}{5,7} = 0,61$$

$$\text{C1} = \frac{3,5}{5,7} = 0,61$$

$$\text{C2} = \frac{3,5}{5,7} = 0,61$$

$$\text{C3} = \frac{3,5}{5,7} = 0,61$$

$$\text{D1} = \frac{3,4}{5,7} = 0,59$$

$$\text{D2} = \frac{3,4}{5,7} = 0,59$$

$$\text{D3} = \frac{3,4}{5,7} = 0,59$$

Keterangan: (A)= etanol 96%; (B)= etanol 70%; (C)= n-heksan; (D)= aquadest

### Lampiran 5.3 Perhitungan kadar senyawa triterpenoid sikloartan

Persamaan linearitas:  $y = 4451,5x + 2944,5$

$$\% \text{ kadar} = \frac{\text{Konsentrasi senyawa sikloartan}}{\text{konsentrasi sampel.volume totalan}} \times 100\%$$

Konsentrasi sampel 50.000 ppm (50 mg dalam 1 mL)

#### Ekstrak etanol 96%

##### Replikasi 1

$$Y = 4451,5x + 2944,5$$

$$5543,8 = 4451,5x + 2944,5$$

$$x = \frac{5543,8 - 2944,5}{4451,5} = 0,5839$$

$$\% \text{ kadar} = \frac{0,5839}{50\mu\text{g}.15} \times 100\% = \frac{0,5839}{750} \times 100\% = 0,0779$$

##### Replikasi 2

$$Y = 4451,5x + 2944,5$$

$$3673,2 = 4451,5x + 2944,5$$

$$x = \frac{3673,2 - 2944,5}{4451,5} = 0,1637$$

$$\% \text{ kadar} = \frac{0,1637}{50\mu\text{g}.15} \times 100\% = \frac{0,1637}{750} \times 100\% = 0,0218$$

##### Replikasi 3

$$Y = 4451,5x + 2944,5$$

$$4876,9 = 4451,5x + 2944,5$$

$$x = \frac{4876,9 - 2944,5}{4451,5} = 0,4341$$

$$\% \text{ kadar} = \frac{0,4341}{50\mu\text{g}.15} \times 100\% = \frac{0,4341}{750} \times 100\% = 0,0579$$

$$\text{Rata-rata kadar} = \frac{0,0779 + 0,0218 + 0,0579}{3} = 0,0525$$

$$\text{SD} = \sqrt{\frac{\sum(X - \bar{X})^2}{n - 1}} = \pm 0,0284$$

Konsentrasi sampel 100.000 ppm (100 mg dalam 1 mL)

#### Ekstrak etanol 70%

##### Replikasi 1

$$Y = 4451,5x + 2944,5$$

$$7818,2 = 4451,5x + 2944,5$$

$$x = \frac{7818,2 - 2944,5}{4451,5} = 1,0948$$

$$\% \text{ kadar} = \frac{1,0948}{100\mu\text{g}.15} \times 100\% = \frac{1,0948}{1500} \times 100\% = 0,0730$$

**Replikasi 2**

$$Y = 4451,5x + 2944,5$$

$$6484,2 = 4451,5x + 2944,5$$

$$x = \frac{6484,2 - 2944,5}{4451,5} = 0,7952$$

$$\% \text{ kadar} = \frac{0,7952}{100\mu\text{g}.15} \times 100\% = \frac{0,7952}{1500} \times 100\% = 0,0530$$

**Replikasi 3**

$$Y = 4451,5x + 2944,5$$

$$5590,4 = 4451,5x + 2944,5$$

$$x = \frac{5590,4 - 2944,5}{4451,5} = 0,5944$$

$$\% \text{ kadar} = \frac{0,5944}{100\mu\text{g}.15} \times 100\% = \frac{0,5944}{1500} \times 100\% = 0,0396$$

$$\text{Rata-rata kadar} = \frac{0,0730 + 0,0530 + 0,0396}{3} = 0,0552$$

$$\text{SD} = \sqrt{\frac{\sum(X - \bar{X})^2}{n - 1}} = \pm 0,0168$$

Konsentrasi sampel 20.000 ppm (20 mg dalam 1 mL)

**Ekstrak n-heksan****Replikasi 1**

$$Y = 4451,5x + 2944,5$$

$$8842,9 = 4451,5x + 2944,5$$

$$x = \frac{8842,9 - 2944,5}{4451,5} = 1,3250$$

$$\% \text{ kadar} = \frac{1,3250}{20\mu\text{g}.10} \times 100\% = \frac{1,3250}{200} \times 100\% = 0,6625$$

**Replikasi 2**

$$Y = 4451,5x + 2944,5$$

$$7193,9 = 4451,5x + 2944,5$$

$$x = \frac{7193,9 - 2944,5}{4451,5} = 0,9546$$

$$\% \text{ kadar} = \frac{0,9546}{20\mu\text{g}.10} \times 100\% = \frac{0,9546}{200} \times 100\% = 0,4773$$

**Replikasi 3**

$$Y = 4451,5x + 2944,5$$

$$7450,3 = 4451,5x + 2944,5$$

$$x = \frac{7450,3 - 2944,5}{4451,5} = 1,0122$$

$$\% \text{ kadar} = \frac{1,0122}{20\mu\text{g}.10} \times 100\% = \frac{1,0122}{200} \times 100\% = 0,5061$$

$$\text{Rata-rata kadar} = \frac{0,6625 + 0,4773 + 0,5061}{3} = 0,5486$$

$$\text{SD} = \sqrt{\frac{\sum(X - \bar{X})^2}{n - 1}} = \pm 0,0997$$

**Ekstrak aquadest****Replikasi 1**

$$Y = 4451,5x + 2944,5$$

$$3728,9 = 4451,5x + 2944,5$$

$$x = \frac{3728,9 - 2944,5}{4451,5} = 0,1762$$

$$\% \text{ kadar} = \frac{0,1762}{2000 \mu\text{g}.10} \times 100\% = \frac{0,1762}{20000} \times 100\% = 0,0009$$

**Replikasi 2**

$$Y = 4451,5x + 2944,5$$

$$2341,8 = 4451,5x + 2944,5$$

$$x = \frac{2341,8 - 2944,5}{4451,5} = -0,1354$$

$$\% \text{ kadar} = \frac{-0,1354}{2000 \mu\text{g}.10} \times 100\% = \frac{-0,1354}{20000} \times 100\% = -0,0007$$

**Replikasi 3**

$$Y = 4451,5x + 2944,5$$

$$3927,5 = 4451,5x + 2944,5$$

$$x = \frac{3927,5 - 2944,5}{4451,5} = 0,2208$$

$$\% \text{ kadar} = \frac{0,2208}{2000 \mu\text{g}.10} \times 100\% = \frac{0,2208}{20000} \times 100\% = 0,0011$$

$$\text{Rata-rata kadar} = \frac{0,0009 + 0,0011}{2} = 0,0010$$

$$\text{SD} = \sqrt{\frac{\sum(X - \bar{X})^2}{n-1}} = \pm 0,0002$$

#### Lampiran 5.4 Perhitungan LOD dan LOQ

$$Y = 4451,5x + 2944,5$$

Jumlah pembanding ( $\mu\text{g}$ )	Area (Y)	Yi	Y-Yi	(Y-Yi) <sup>2</sup>
0,2	3588,4	3834,80	-246,40	60712,95
0,4	3906,0	4725,10	-819,10	670924,61
0,8	7147,6	6505,70	641,90	412035,61
1,6	10999,5	10066,90	932,60	669742,76
3,2	16680,4	17189,30	-508,90	258979,21
			<b>Jumlah</b>	<b>2272395,35</b>

$$S_y = \sqrt{\frac{\sum(Y-Y_i)^2}{n-2}}$$

$$S_y = \sqrt{\frac{2272395,35}{3}}$$

$$S_y = 870,3247$$

$$\text{LOD} = \frac{3 \times S_y}{a}$$

$$\text{LOD} = \frac{3 \times 870,3247}{4451,5}$$

$$\text{LOD} = 0,5865$$

$$\text{LOQ} = \frac{10 \times S_y}{a}$$

$$\text{LOQ} = \frac{10 \times 870,3247}{4451,5}$$

$$\text{LOQ} = 1,9551$$

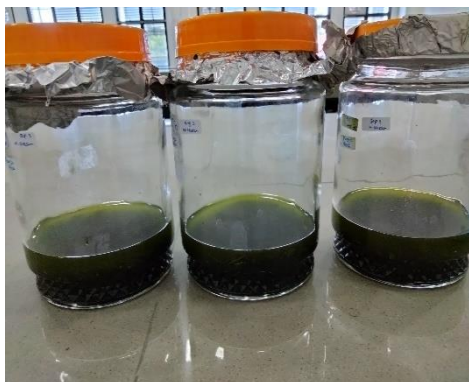
## Lampiran 6. Dokumentasi penelitian



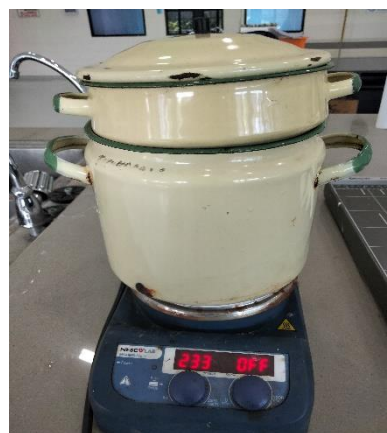
**Gambar 8.** Pengambilan sampel



**Gambar 9.** Proses pengeringan



**Gambar 10.** Proses maserasi dengan pelarut etanol 70%, etanol 96%, dan N-Heksan



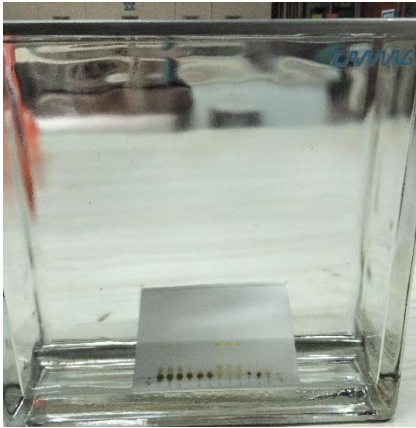
**Gambar 11.** Proses infusa dengan pelarut aquadest



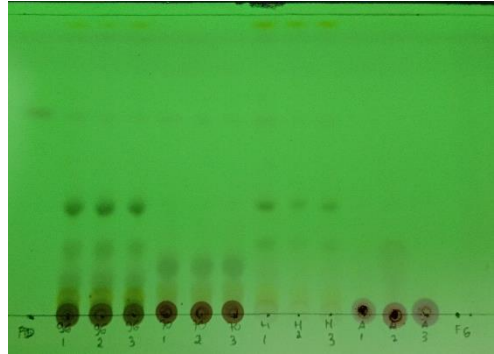
**Gambar 12.** Proses penguapan dengan rotavapor



**Gambar 13.** Proses penguapan dengan freeze drying



**Gambar 14.** Proses KLT



**Gambar 15.** Hasil KLT



**Gambar 16.** KLT densitometri

## ***CURRICULUM VITAE***

### **A. Data pribadi**

1. Nama : Nur Aidah Nurman
2. Tempat, tgl. Lahir : Parepare, 22 Oktober 2002
3. Alamat : Jln Bone Raya Blok J/98, BSP.
4. Kewarganegaraan : Warga Negara Indonesia

### **B. Riwayat Pendidikan**

1. Tamat SMP tahun 2017 di MTs N. Model, Kota Sorong
2. Tamat SMA tahun 2020 di SMAS Averos, Kota Sorong

### **C. Pekerjaan dan Riwayat Pekerjaan**

- Jenis pekerjaan : -
- NIP atau identitas lain (NIK) : -
- Pangkat/Jabatan : -

### **D. Karya ilmiah yang telah dipublikasikan (misalnya pada jurnal):**

-

### **E. Makalah pada Seminar/Konferensi Ilmiah Nasional dan Internasional**

-