

## DAFTAR PUSTAKA

- Ahmad I, Pertiwi AS, Kembaren YH, Rahman A, Mun'im A. 2018. *Application of Natural Deep Eutectic Solvent-Based Ultrasonic Assisted Extraction of Total Polyphenolic and Caffeine Content from Coffe Beans (Coffea Beans L.) For Instant Food Products*. Journal Applied Pharmaceutical Science; 8(08): 138-143.
- Ahmad, I., & Prabowo, W. C. 2020. *Optimasi metode ekstraksi berbantu mikrowave dengan pelarut hijau (asam sitrat-glukosa) terhadap kadar polifenol total dari daun Kadamba (Mitragyna speciosa Korth. Havil) menggunakan response surface methodology*. Majalah Farmasi dan Farmakologi, 24(1), 11-16.
- Aisha, A. F., Abu-Salah, K. M., Siddiqui, M. J., Ismail, Z., & Majid, A. M. S. A. 2012. *Quantification of  $\alpha$ -,  $\beta$ -and  $\gamma$ -mangostin in Garcinia mangostana fruit rind extracts by a reverse phase high performance liquid chromatography*. Journal of Medicinal Plants Research, 6(29), 4526-4534.
- Andayani R dan Ismed Friardi. 2017. *Analisis  $\alpha$ -Mangostin dalam Minuman Herbal Kulit Buah Manggis (Garcinia mangostana L.) dengan Metode Kromatografi Lapis Tipis-Densitometri*. Jurnal Sains Farmasi dan Klinis.
- Aroso, I. M., Paiva, A., Reis, R.L. & Duarte, A.R.C. 2017. *Natural deep eutectic solvents from choline chloride and betaine – Physicochemical properties*". Journal of Molecular Liquids. Elsevier B.V. 241. pp. 654–661.
- Buanasari, B., Eden, W. T., & Sholichah, A. I. 2017. *Extraction of Phenolic Compounds from Petai Leaves (Parkia speciosa Hassk.) using Microwave and Ultrasound-Assisted Methods*. Jurnal Bahan Alam Terbarukan, 6(1), 25-31.
- Castro-Lopez, C. et al. 2016. *Phenolic compounds recovery from grape fruit and by-product: An overview of extraction methods*. INTECH.
- Dewi, I. D. A. D. Y., Astuti, K. W., & Warditiani, N. K. 2013. *Identifikasi kandungan kimia ekstrak kulit buah manggis (garcinia mangostana l.)*. Jurnal Farmasi Udayana, 2(4), 13-18.
- Fernandes M.A, Espino M, Gomes FJV, Silva MF. 2017. *Novel Approaches Mediated by Tailor-Made Green Solvents For The Extraction Of Phenolic Compounds From Agro-Food Industrial by-product*. Food Chemistry; 239:671-678

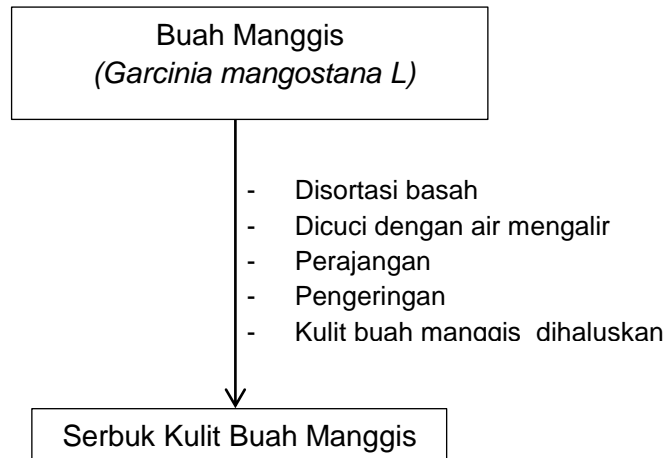
- Gandjar, I., Rohman, A., 2018. *Kimia Farmasi Analisis*. Yogyakarta: Pustaka Pelajar
- González, C.G., Mustafa, N.R., Wilson, E.G., Verpoorte, R., and Choi, Y.H., 2018, Application of natural deep eutectic solvents for the “green” extraction of vanillin from vanilla pods, *Flavour Fragrance J.*, 33 (1), 91–96.
- Hakim, Abdul., Muti'ah, R., Aprinda, R., Suryadinata, A., dan Maslakhah, F. N. (2018). *Metabolite Profiling Bagian Akar, Batang, Daun, dan Biji Helianthus annuus L. Menggunakan UPLC-MS*. *Media Pharmaceutica Indonesiana*. Vol. 2 No. 2.
- Mardiana, L. 2012. *Ramuan dan Khasiat Kulit Buah Manggis*. (B. P. W., Ed.) Jakarta: Penebar Swadaya
- Martias, dkk. 2021. *Teknologi Budidaya dan Pascapanen Manggis Berdaya Saing Ekspor*. Jakarta: PT. Bumi Aksara
- Medina-Torres, Nelly et al. 2017. *Ultrasound assisted extraction for the recovery of phenolic compounds from vegetable sources*. *Agronomy*, 7: 47.
- Montgomery, D.C. 2013. *Design and Analysis of Experiments Eighth Edition*. Arizona State University.
- Mulia, K., Yoksandi, Y., Kurniawan, N., Pane, I. F., & Krisanti, E. A. 2019. *1,2- Propanediol-betaine as green solvent for extracting  $\alpha$ -mangostin from the rind of mangosteen fruit: Solvent recovery and physical characteristics*. *Journal of Physics: Conference Series*, 1198(6), [062003].
- Najib, A., 2018. *Ekstraksi Senyawa Bahan Alam*, Yogyakarta: CV Budi Utama
- Ovalle-Magallanes, B.; Eugenio-Pérez, D.; Pedraza-Chaverri, J. *Medicinal properties of mangosteen (Garcinia mangostana L.): A comprehensive update*. *Food Chem Toxicol* 2017, 109, 102–122
- Paiva, A., Rita, C., Ivo, A., Marta, M., Rui, L. R., & Ana, Rita C. 2014. *Natural Deep Eutectic Solvents-Solvents for the 21<sup>st</sup> Century*. ACS Sustainable Chemistry & Engineering. ACS Publications.
- Plaza, M., Domínguez-Rodríguez, G., Sahelices, C., & Marina, M. L. 2021. *A Sustainable Approach for Extracting Non-Extractable Phenolic Compounds from Mangosteen Peel Using Ultrasound-Assisted Extraction and Natural Deep Eutectic Solvents*. *Applied Sciences*, 11(12), 5625.

- Pothitirat, Werayut, Mullika T.C., Roongtawan S. and Wandee G. 2009. *Comparison of Bioactive Compounds Content, Free Radical Scavenging and Antiacne Inducing Bacteria Activities of Extracts from The Mangosteen Fruit Rind at Two Stages of Maturity*. *Fitoterapia* (80), 442–44
- Raymond H. Myers, Douglas C. Montgomery, Christine M. Anderson-Cook. 2016. *Response Surface Methodology: Process and Product Optimization Using Designed Experiments* : Wiley
- Rohman, A., Rafi, M., Alam, G., Muchtaridi, M., & Windarsih, A. 2019. *Chemical composition and antioxidant studies of underutilized part of mangosteen (Garcinia mangostana L.) fruit*. *J Appl Pharm Sci*, 9(8), 47-52.
- Rubiyanto, D., 2016. *Teknik Dasar Kromatografi*. Yogyakarta: Deepublish
- Sa'diyah, N., Aminudin, M. F., Prihastuti, P., & Kurniasari, L. 2019. *Ekstraksi Kulit Buah Manggis (Garcinia Mangostana L.) menggunakan Microwave Assisted Extraction*. *Prosiding SNST Fakultas Teknik*, 1(1).
- Samah, E. 2021. *Simbiosis Cendawan Mikoriza Arbuskula dengan Tumbuhan Budidaya*. Yayasan Kita Menulis.
- Sudjadi dan Rohman. A. 2018. *Analisis Kuantitatif Obat*. Yogyakarta: UGM Press
- Suttirak, W., & Manurakchinakorn, S. 2014. *In vitro antioxidant properties of mangosteen peel extract*. *Journal of food science and technology*, 51(12), 3546-3558.
- Tousian Shandiz, H.; Razavi, B.M.; Hosseinzadeh, H. *Review of Garcinia mangostana and its xanthenes in metabolic syndrome and related complications*. *Phyther Res* 2017, 31, 1173–1182,
- Vanda, H., Dai, Y., Wilson, E.G., Verpoorte, R., and Choi, Y.H., 2018, *Green solvents from ionic liquids and deep eutectic solvents to natural deep eutectic solvents*, *Comptes Rendus Chim.*, 21 (6), 628–638.
- Wulandari, L. 2011. *Kromatografi Lapis Tipis*. Jember: Pt. Taman Kampus Presindo
- Yuniarto, K., Muvianto, C. M. O., & Ernia, E. 2021. *Aplikasi Ultrasound Assisted Extraction Untuk Produksi Minyak Bawang Putih Varietas Lokal*. *Jurnal Teknologi Pertanian*, 22(3), 177-186.

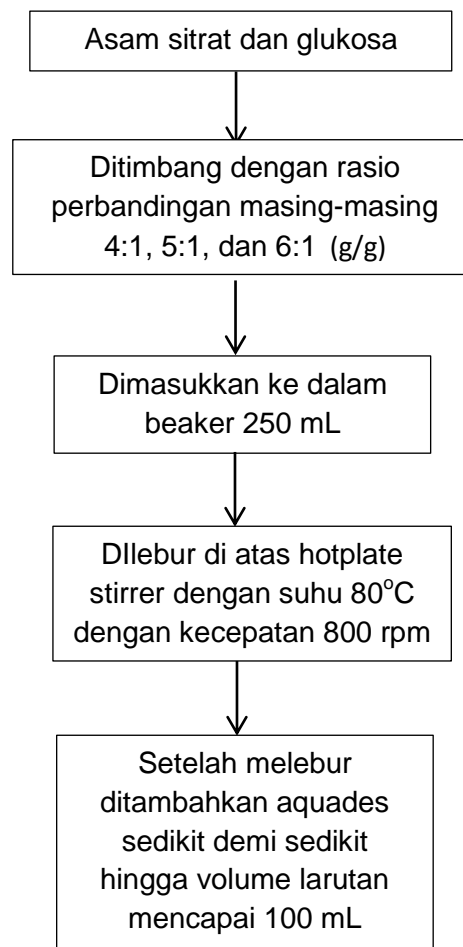
## LAMPIRAN

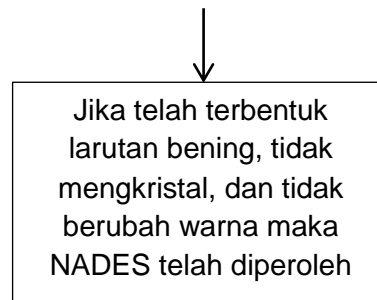
### Lampiran 1. Skema Kerja

#### 1.1. Preparasi Sampel

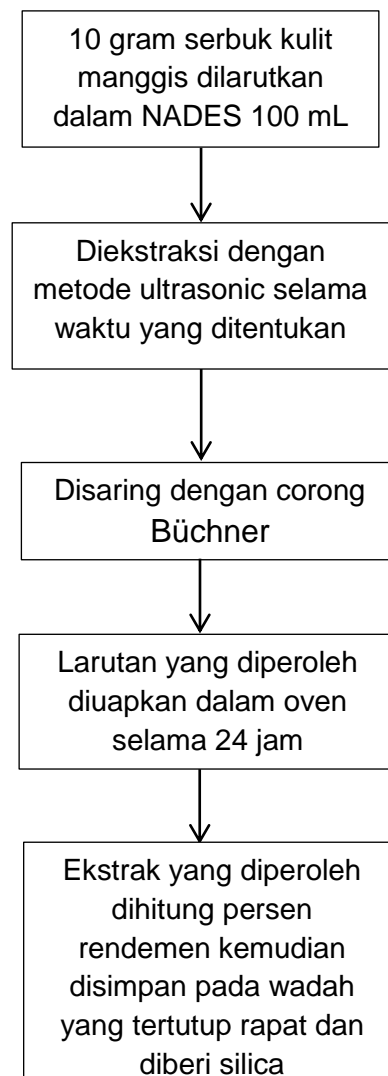


#### 1.2. Preparasi NADES





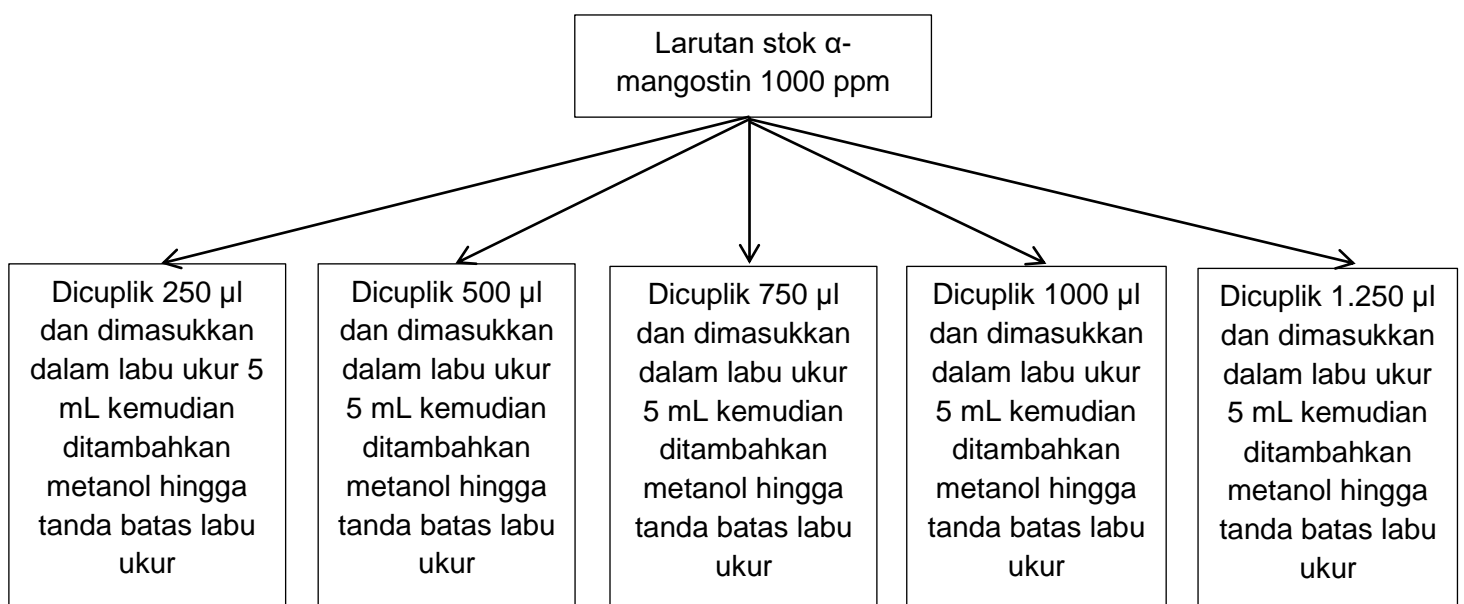
### 1.3. Proses Ekstraksi



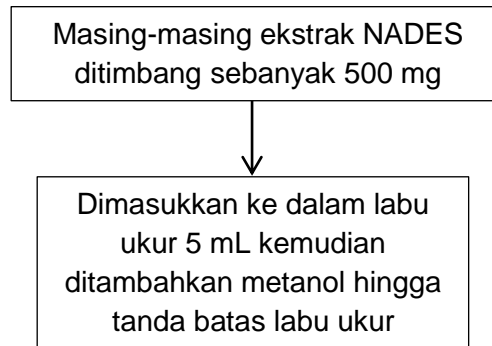
#### 1.4. Pembuatan Larutan stok baku $\alpha$ -mangostin



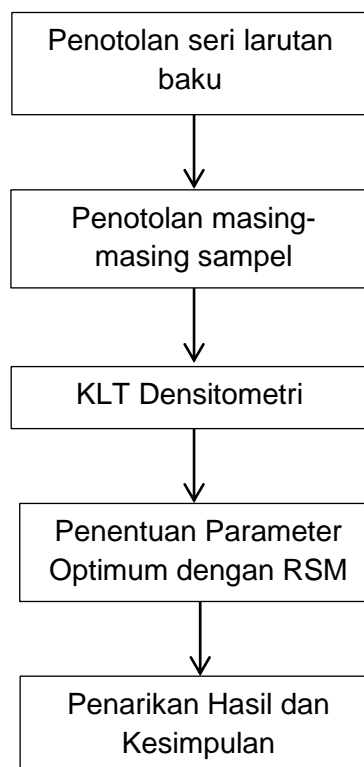
#### 1.5. Pembuatan Seri Larutan baku $\alpha$ -mangostin



## 1.6. Pembuatan Larutan Sampel



## 1.7. Analisis Kualitatif dan Kuantitatif



## Lampiran 2. Perhitungan Kadar $\alpha$ -mangostin

$$\text{Persamaan : } y = 66,378x + 2536,8$$

Keterangan :

y = luas area

x = konsentrasi

- Ekstrak NADES 4:1 (g/g) dengan waktu ekstraksi 15 menit ( $A_1$ ) diperoleh luas area = 3845,4 ppm. Sehingga untuk mendapatkan konsentrasi :

$$3845,4 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{3845,4 + 2536,8}{66,378x}$$

$$x = 96,14 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 4:1 (g/g) dengan waktu ekstraksi 15 menit

$$\text{Kadar} = \frac{96,14 \cdot v \cdot fp}{g}$$

$$\text{Kadar} = \frac{96,14 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$\text{Kadar} = 0,9614 \text{ mg/g}$$

- Ekstrak NADES 4:1 (g/g) dengan waktu ekstraksi 45 menit ( $A_2$ ) diperoleh luas area = 2110,5 ppm. Sehingga untuk mendapatkan konsentrasi :

$$2110,5 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{2110,5 + 2536,8}{66,378x}$$

$$x = 70,01 \text{ ppm}$$



Kadar  $\alpha$ -mangostin pada ekstrak NADES 4:1 (g/g) dengan waktu ekstraksi 45 menit

$$Kadar = \frac{70,01 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{70,01 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 0,7001 \text{ mg/g}$$

- Ekstrak NADES 3,5:1 (g/g) dengan waktu ekstraksi 30 menit (A<sub>3</sub>) diperoleh luas area = 8228,8 ppm Sehingga untuk mendapatkan konsentrasi :

$$8228,8 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{8228,8 + 2536,8}{66,378x}$$

$$x = 162,18 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 3,5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{162,18 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{162,18 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 01,6218 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit (B<sub>1</sub>) diperoleh luas area = 14798,2 ppm. Sehingga untuk mendapatkan konsentrasi :

$$14798,2 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{14798,2 + 2536,8}{66,378x}$$

$$x = 261,15 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{261,15 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{261,15 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 2,6115 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit (B<sub>2</sub>) diperoleh luas area = 3452,0 ppm. Sehingga untuk mendapatkan konsentrasi :

$$3452,0 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{3452,0 + 2536,8}{66,378x}$$

$$x = 90,222 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{90,222 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{90,222 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 0,9022 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit (B<sub>3</sub>) diperoleh luas area = 4901,4 ppm. Sehingga untuk mendapatkan konsentrasi :

$$4901,4 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{4901,4 + 2536,8}{66,378x}$$

$$x = 112,05 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{1,1205 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{112,05 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 1,1205 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit (B<sub>4</sub>) diperoleh luas area = 5506,5 ppm. Sehingga untuk mendapatkan konsentrasi :

$$5506,5 \text{ bpj} = 66,378x - 2536,8$$

$$66,378x = \frac{5506,5 + 2536,8}{66,378x}$$

$$x = 121,17 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{121,17 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{121,17 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 1,2117 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit (B<sub>5</sub>) diperoleh luas area = 2925,2 ppm. Sehingga untuk mendapatkan konsentrasi :

$$2925,2 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{2925,2 + 2536,8}{66,378x}$$

$$x = 82,28 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{82,28 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{82,28 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 0,8228 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 10 menit (B<sub>6</sub>) diperoleh luas area = 13333,7 ppm. Sehingga untuk mendapatkan konsentrasi :

$$13333,7 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{13333,7 + 2536,8}{66,378x}$$

$$x = 239,09 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 10 menit

$$Kadar = \frac{239,09 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{239,09 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 2,3909 \text{ mg/g}$$

- Ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 10 menit (B<sub>7</sub>) diperoleh luas area = 10964,1 ppm. Sehingga untuk mendapatkan konsentrasi :

$$10964,1 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{10964,1 + 2536,8}{66,378x}$$

$$x = 203,39 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 5:1 (g/g) dengan waktu ekstraksi 50 menit

$$Kadar = \frac{203,39 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{203,39 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 2,0339 \text{ mg/g}$$

- Ekstrak NADES 6:1 (g/g) dengan waktu ekstraksi 15 menit ( $C_1$ ) diperoleh luas area = 5113,2 ppm. Sehingga untuk mendapatkan konsentrasi :

$$5113,2 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{5113,2 + 2536,8}{66,378x}$$

$$x = 115,24 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 6:1 (g/g) dengan waktu ekstraksi 15 menit

$$Kadar = \frac{115,24 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{115,24 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 1,1524 \text{ mg/g}$$

- Ekstrak NADES 6:1 (g/g) dengan waktu ekstraksi 45 menit ( $C_2$ ) diperoleh luas area = 5236,1 ppm. Sehingga untuk mendapatkan konsentrasi :

$$5236,1 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{5236,1 + 2536,8}{66,378x}$$

$$x = 117,10 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 6:1 (g/g) dengan waktu ekstraksi 45 menit

$$Kadar = \frac{117,10 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{117,10 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 1,171 \text{ mg/g}$$

- Ekstrak NADES 6,4:1 (g/g) dengan waktu ekstraksi 30 menit (C<sub>3</sub>) diperoleh luas area = 3053,8 ppm. Sehingga untuk mendapatkan konsentrasi :

$$3053,8 \text{ ppm} = 66,378x - 2536,8$$

$$66,378x = \frac{3053,8 + 2536,8}{66,378x}$$

$$x = 84,22 \text{ ppm}$$

Kadar  $\alpha$ -mangostin pada ekstrak NADES 6,4:1 (g/g) dengan waktu ekstraksi 30 menit

$$Kadar = \frac{84,22 \cdot v \cdot fp}{g}$$

$$Kadar = \frac{84,22 \cdot 0,005 \cdot 1}{0,5 \text{ g}}$$

$$Kadar = 0,8422 \text{ mg/g}$$

### Lampiran 3. Perhitungan Persen Rendemen Ekstrak NADES

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 30 menit (B<sub>1</sub>)

$$\begin{aligned}\text{Rendemen (\%)} &= \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \% \\ &= \frac{11,3 \text{ g}}{10 \text{ g}} \times 100 \% \\ &= 1,13\%\end{aligned}$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 50 menit (B<sub>7</sub>)

$$\begin{aligned}\text{Rendemen (\%)} &= \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \% \\ &= \frac{11,7 \text{ g}}{10 \text{ g}} \times 100 \% \\ &= 1,17\%\end{aligned}$$

- Ekstrak NADES 4:1 (g/g) Waktu Ekstraksi 15 menit (A<sub>1</sub>)

$$\begin{aligned}\text{Rendemen (\%)} &= \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \% \\ &= \frac{1,01 \text{ g}}{10 \text{ g}} \times 100 \% \\ &= 10,1\%\end{aligned}$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 30 menit (B<sub>2</sub>)

$$\begin{aligned}\text{Rendemen (\%)} &= \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \% \\ &= \frac{1,10 \text{ g}}{10,3 \text{ g}} \times 100 \% \\ &= 11,0\%\end{aligned}$$

- Ekstrak NADES 6:1 (g/g) Waktu Ekstraksi 15 menit (C<sub>1</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,17 \text{ g}}{20 \text{ g}} \times 100 \%$$

$$= 11,7\%$$

- Ekstrak NADES 6:1 (g/g) Waktu Ekstraksi 45 menit (C<sub>2</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,19 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 11,9\%$$

- Ekstrak NADES 3,5:1 (g/g) Waktu Ekstraksi 30 menit (A<sub>3</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,00 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 10,0\%$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 30 menit (B<sub>3</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,13 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 11,3\%$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 30 menit (B<sub>4</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,10 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 11,0\%$$

- Ekstrak NADES 4:1 (g/g) Waktu Ekstraksi 45 menit (A<sub>2</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$



$$= \frac{1,02 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 10,2\%$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 30 menit (B<sub>5</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,13 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 11,3\%$$

- Ekstrak NADES 5:1 (g/g) Waktu Ekstraksi 10 menit (B<sub>6</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

$$= \frac{1,03 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 10,3\%$$

- Ekstrak NADES 6,4:1 (g/g) Waktu Ekstraksi 30 menit (C<sub>3</sub>)

$$\text{Rendemen (\%)} = \frac{\text{Berat ekstrak (g)}}{\text{Berat Simplisia (g)}} \times 100 \%$$

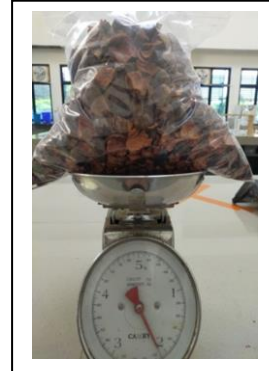
$$= \frac{1,19 \text{ g}}{10 \text{ g}} \times 100 \%$$

$$= 11,9\%$$

#### Lampiran 4. Dokumentasi Kegiatan



**Gambar 1. Pengambilan Sampel**



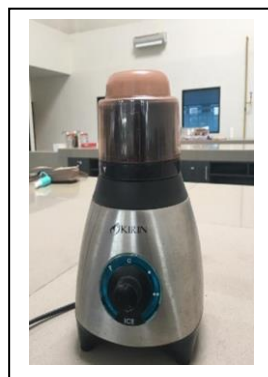
**Gambar 2. Penimbangan Simplisia**



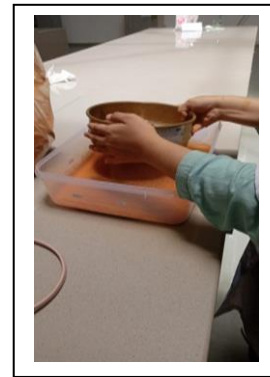
**Gambar 3. Pencucian Sampel**



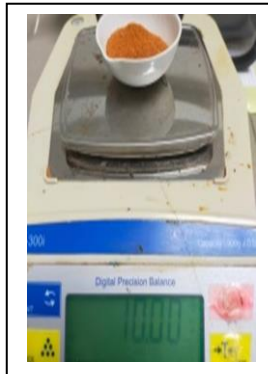
**Gambar 4. Pengeringan Sampel**



**Gambar 5. Penghalusan Sampel**



**Gambar 6. Pengayakan Sampel**



**Gambar 7. Penimbangan  
10 gram Sampel**



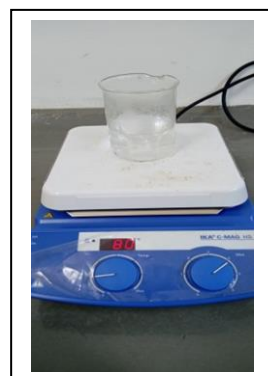
**Gambar 8. Proses  
ekstraksi**



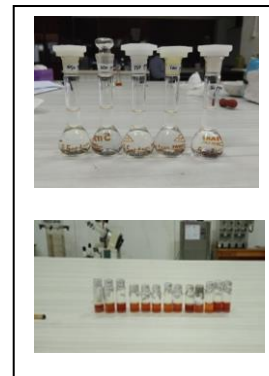
**Gambar 9. Penyaringan  
Sampel**



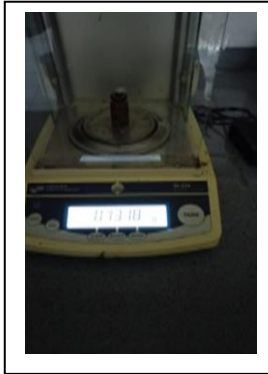
**Gambar 10. Pengovenan  
hasil ekstraksi**



**Gambar 11. Preparasi  
NADES**



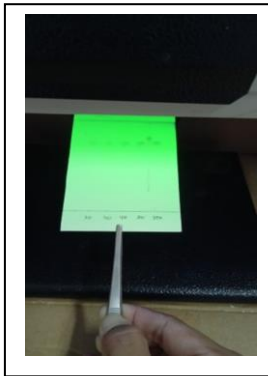
**Gambar 12. Pembuatan  
larutan stok dan larutan uji**



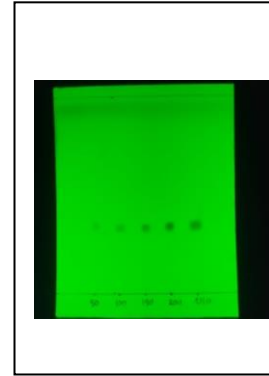
**Gambar 13. Penimbangan ekstrak 500 mg**



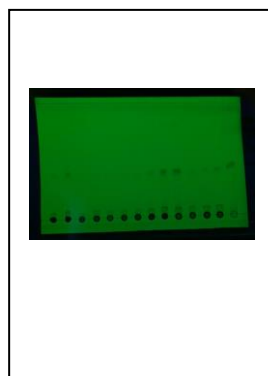
**Gambar 14. Proses elusi lempeng**



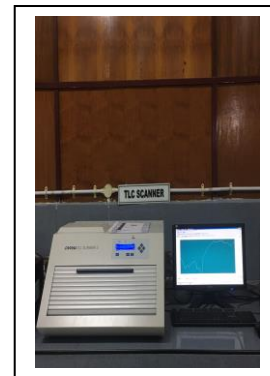
**Gambar 15. Pengamatan dibawah uv**



**Gambar 16. Hasil elusi kurva baku**

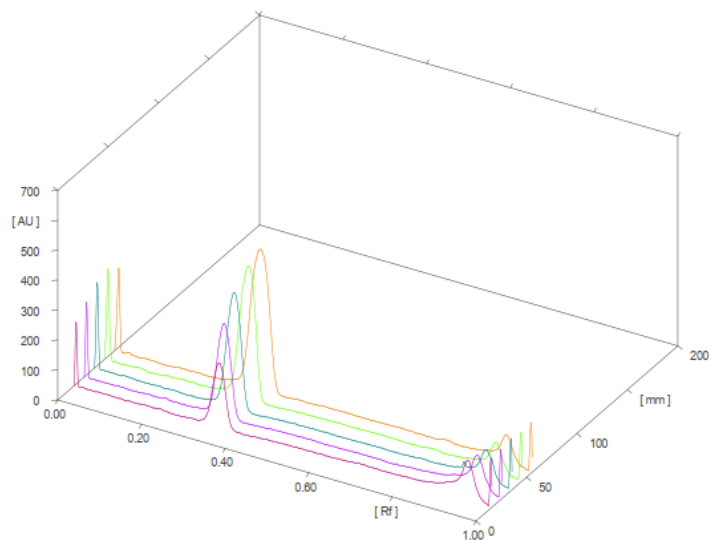


**Gambar 17. Hasil elusi sampel**

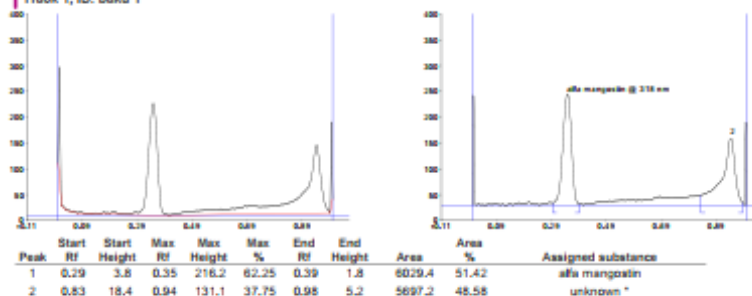


**Gambar 18. Analisis Lempeng KLT dengan Alat TLC Scanner**

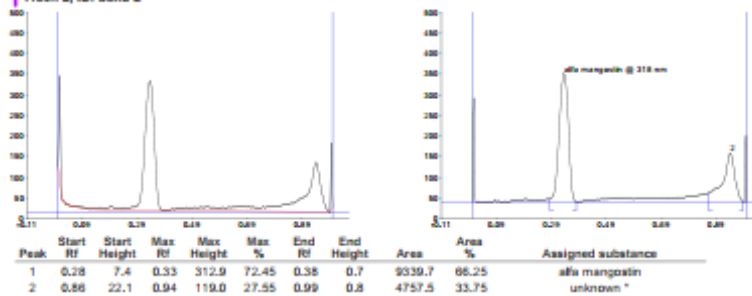
## Lampiran 5. Hasil TLC Scanner Kurva Baku



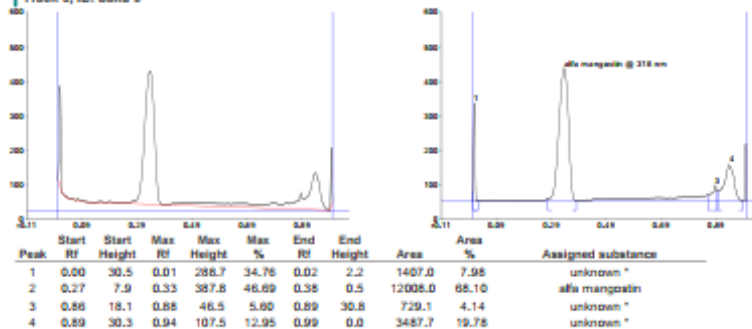
Track 1, ID: baku 1



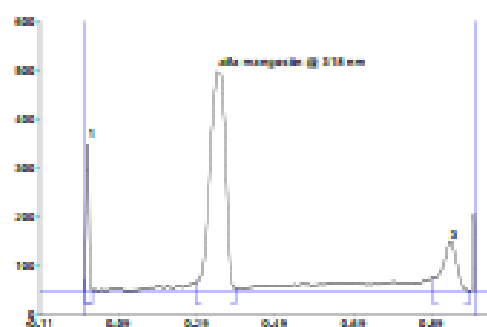
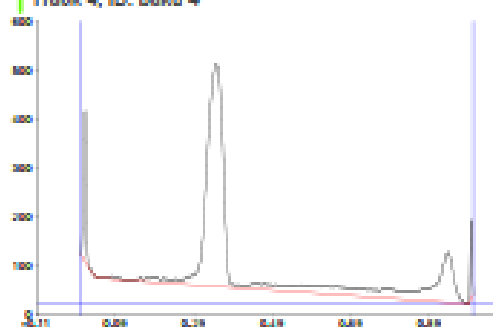
Track 2, ID: baku 2



Track 3, ID: baku 3

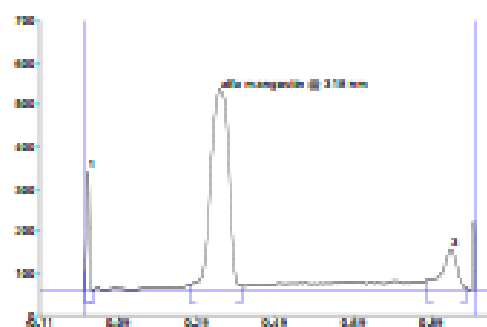
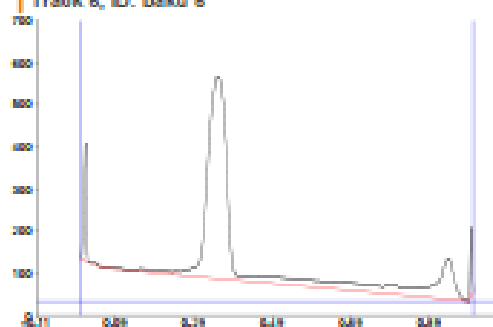


Track 4, ID: baku 4



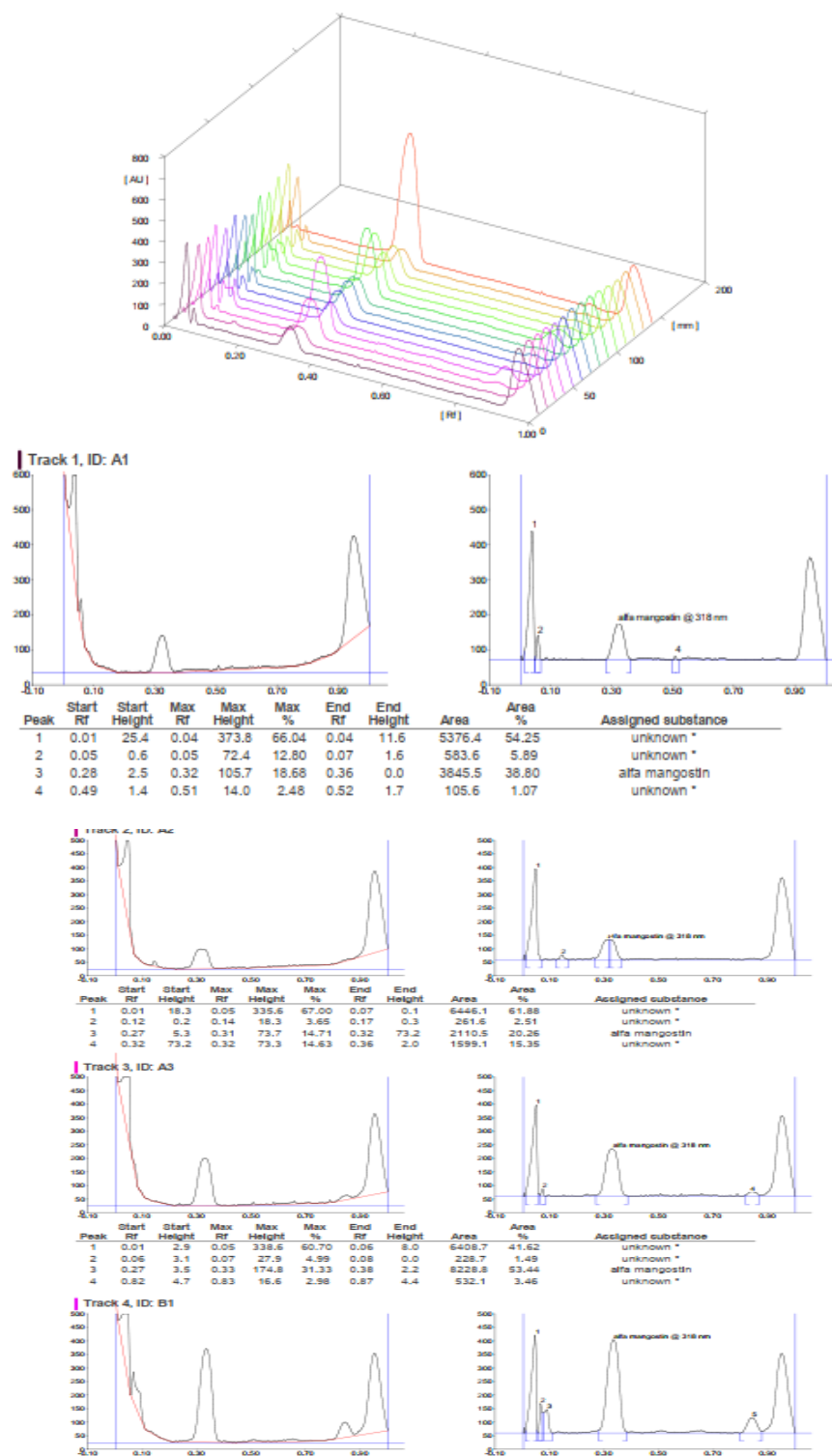
Peak	Start RI	Start Height	Max RI	Max Height	Max %	End RI	End Height	Area	Area %	Assigned substance
1	0.00	23.8	0.01	305.5	35.56	0.02	0.1	1771.8	8.81	unknown *
2	0.29	18.2	0.35	492.0	52.81	0.39	6.2	15502.9	75.73	alfa mangostin
3	0.89	26.5	0.94	101.6	11.82	0.99	0.3	3225.3	15.68	unknown *

Track 5, ID: baku 5



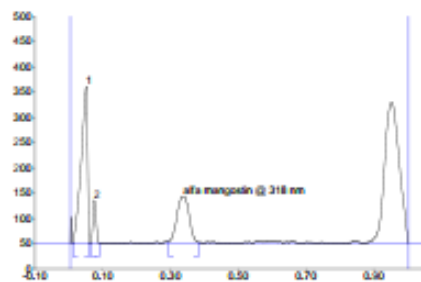
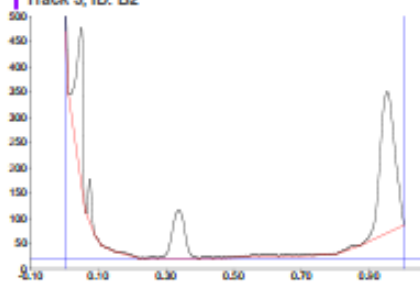
Peak	Start RI	Start Height	Max RI	Max Height	Max %	End RI	End Height	Area	Area %	Assigned substance
1	0.00	46.2	0.01	280.8	32.72	0.02	0.8	1837.5	8.87	unknown *
2	0.27	13.2	0.35	479.4	55.85	0.40	10.1	19497.2	79.43	alfa mangostin
3	0.88	23.3	0.94	98.2	11.43	0.98	4.7	3412.5	13.90	unknown *

## Lampiran 6. Hasil TLC Scanner Sampel



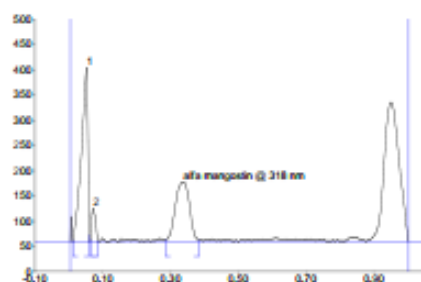
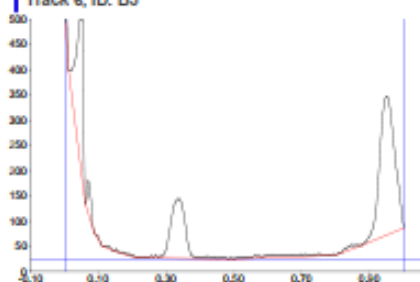
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	10.0	0.04	361.7	37.68	0.05	11.4	6415.2	25.04	unknown *
2	0.05	1.9	0.06	109.8	11.44	0.07	74.7	1008.9	3.94	unknown *
3	0.08	75.8	0.09	87.1	9.07	0.11	0.3	1374.6	5.36	unknown *
4	0.28	10.4	0.33	345.2	35.96	0.38	4.2	14798.2	57.75	alfa mangostin
5	0.80	0.2	0.84	56.1	5.85	0.88	5.9	2025.9	7.91	unknown *

Track 5, ID: B2



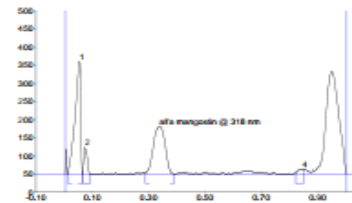
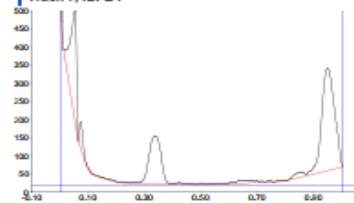
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	2.6	0.05	312.4	63.40	0.06	1.2	5855.5	57.92	unknown *
2	0.05	0.5	0.07	86.1	17.47	0.09	0.1	801.4	7.93	unknown *
3	0.29	4.2	0.33	94.3	19.14	0.38	2.8	3452.0	34.15	alfa mangostin

Track 6, ID: B3



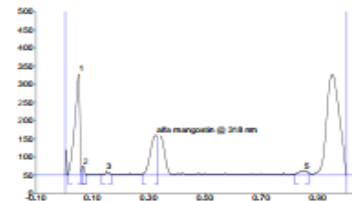
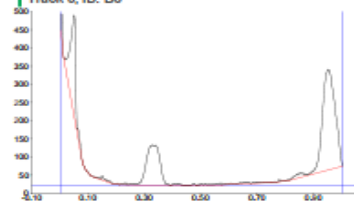
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	1.7	0.05	344.7	65.24	0.06	12.6	6456.7	53.44	unknown *
2	0.06	3.4	0.07	65.8	12.45	0.08	0.5	724.4	6.00	unknown *
3	0.28	3.4	0.33	117.9	22.31	0.38	2.8	4901.4	40.57	alfa mangostin

Track 7, ID: B4



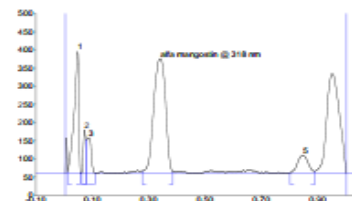
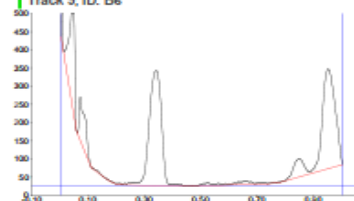
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	1.3	0.05	311.3	58.78	0.06	8.5	6236.3	48.46	unknown *
2	0.06	1.3	0.07	73.5	13.87	0.09	0.1	856.4	6.65	unknown *
3	0.28	3.4	0.33	131.1	24.75	0.39	0.9	5506.5	42.79	alfa mangostin
4	0.82	3.9	0.84	13.8	2.60	0.85	13.1	270.9	2.10	unknown *

Track 8, ID: B5



Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	6.2	0.05	280.6	63.85	0.06	8.0	4578.8	58.03	unknown *
2	0.06	24.5	0.06	24.6	5.59	0.07	1.9	173.8	2.03	unknown *
3	0.13	0.5	0.15	11.4	2.59	0.17	1.2	130.8	1.52	unknown *
4	0.27	2.3	0.33	110.1	25.06	0.33	109.3	2925.2	34.10	alfa mangostin
5	0.82	2.4	0.85	12.8	2.91	0.87	5.6	370.5	4.32	unknown *

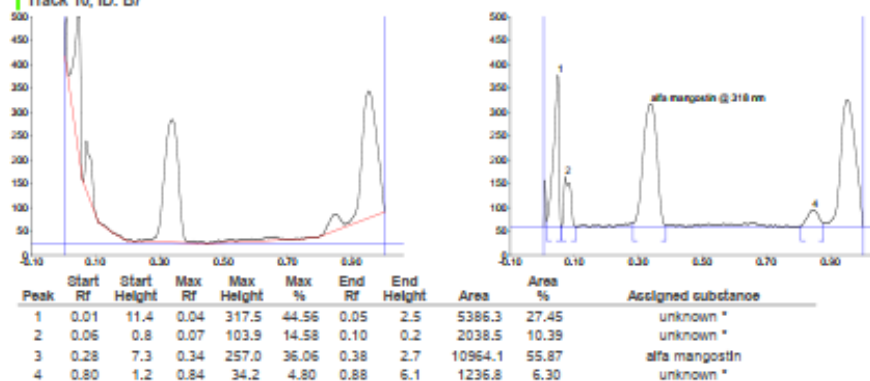
Track 9, ID: B6



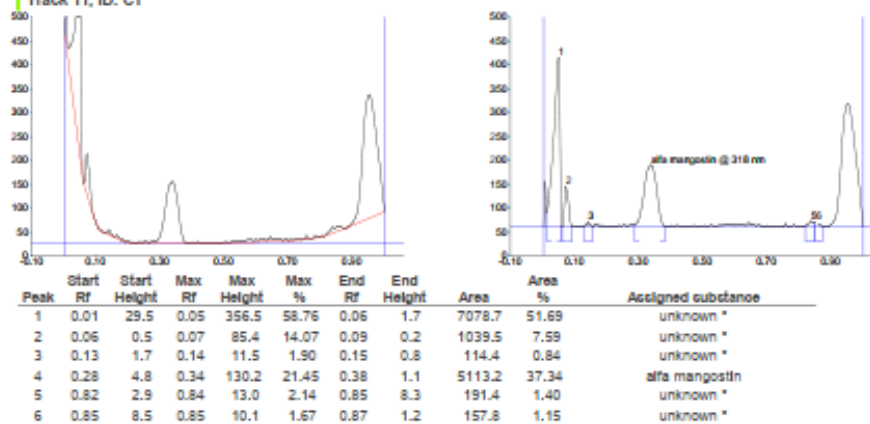


Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	0.01	4.9	0.04	335.4	36.47	0.05	3.4	5607.4	23.84	unknown *
2	0.06	0.9	0.07	119.7	13.02	0.08	0.8	1167.2	4.96	unknown *
3	0.08	92.7	0.08	97.5	10.61	0.10	0.4	1477.3	6.28	unknown *
4	0.27	6.7	0.34	316.5	34.41	0.38	4.4	13333.7	56.70	alfa mangostin
5	0.80	1.1	0.85	50.5	5.49	0.89	6.2	1930.9	8.21	unknown *

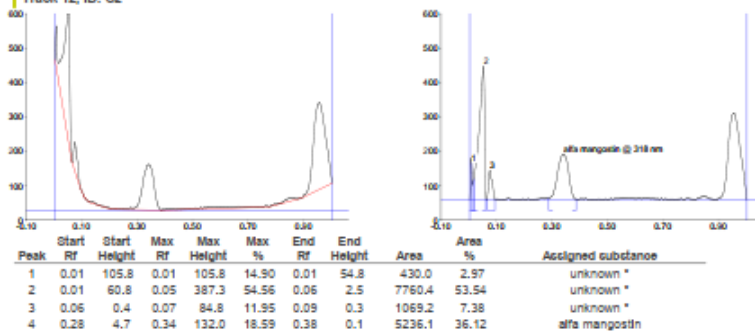
Track 10, ID: B7



Track 11, ID: C1



Track 12, ID: C2



Track 13, ID: C3

