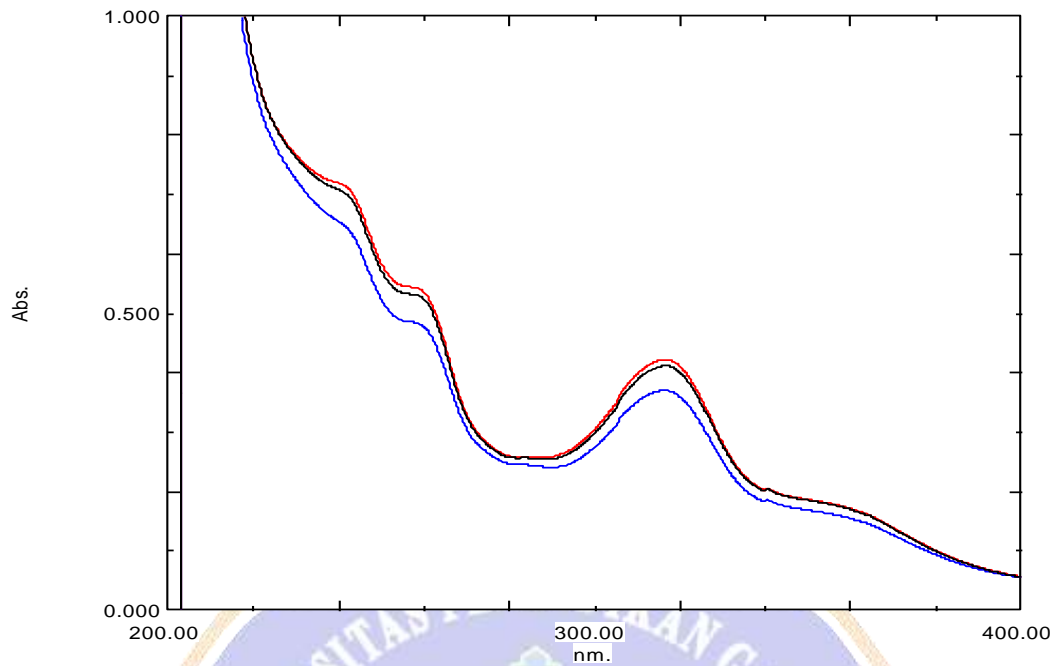


**Lampiran 1. Spektrum UV-Vis Endapan Kuning Fraksi Etanol : Akuades**



| No | Panjang Gelombang | Serapan Sampel 1 | Serapan Sampel 2 | Serapan Sampel 3 |
|----|-------------------|------------------|------------------|------------------|
| 1  | 340,40            | 0,205            | 0,206            | 0,187            |
| 2  | 316,60            | 0,412            | 0,423            | 0,370            |
| 3  | 205,40            | 4,000            | 4,000            | 4,000            |
| 4  | 339,60            | 0,201            | 0,203            | 0,183            |
| 5  | 288,80            | 0,255            | 0,258            | 0,241            |
| 6  | 282,00            | 0,256            | 0,259            | 0,245            |
| 7  | 243,20            | 0,689            | 0,702            | 0,632            |

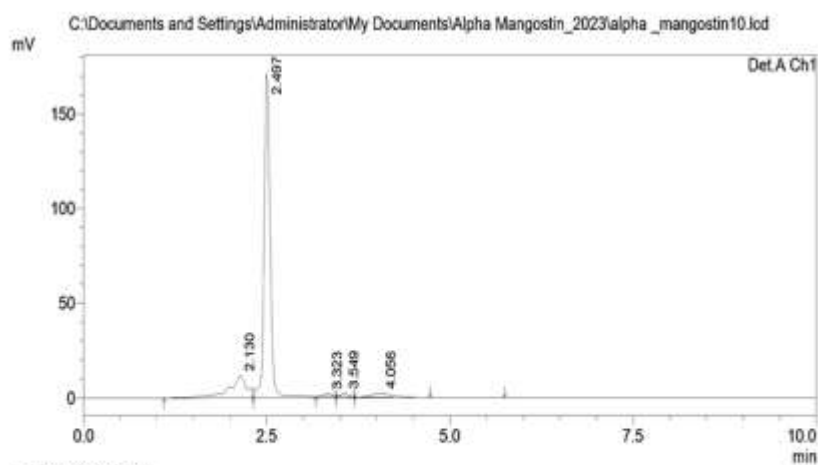
## Lampiran 2. Kromatogram HPLC Endapan Kuning Fraksi Etanol : Akuades

6/26/2023 16:15:33 1 / 1

### ==== Shimadzu LCsolution Analysis Report ====

C:\Documents and Settings\Administrator\My Documents\Alpha Mangostin\_2023\alpha\_mangostin10.lcd  
 Acquired by : Admin  
 Sample Name : Serbuk  
 Sample ID : Serbuk kuning  
 Vial # : 1  
 Injection Volume : 1 uL  
 Data File Name : alpha\_mangostin10.lcd  
 Method File Name : alpha\_mangostin10.m  
 Batch File Name :  
 Report File Name : N18.lcr  
 Data Acquired : 6/26/2023 4:04:38 PM  
 Data Processed : 6/26/2023 4:14:40 PM

#### <Chromatogram>



PeakTable

| Peak# | Ret. Time | Area    | Height | Area %  | Height % |
|-------|-----------|---------|--------|---------|----------|
| 1     | 2.130     | 191152  | 11794  | 15.072  | 6.239    |
| 2     | 2.497     | 1017472 | 171593 | 80.226  | 90.771   |
| 3     | 3.323     | 12260   | 1763   | 0.967   | 0.932    |
| 4     | 3.549     | 12642   | 2057   | 0.997   | 1.088    |
| 5     | 4.056     | 34727   | 1833   | 2.738   | 0.970    |
| Total |           | 1268252 | 189039 | 100.000 | 100.000  |

C:\Documents and Settings\Administrator\My Documents\Alpha Mangostin\_2023\alpha\_mangostin10.lcd

### Lampiran 3. Pembuatan larutan penentuan konstanta asosiasi kompleks

#### 1. Perhitungan pembuatan larutan mangostin dalam air

|              |   |                      |
|--------------|---|----------------------|
| Massa        | : | 0,0041 gram          |
| Mr           | : | 410,5 g/mol          |
| Mol          | : | 0,0001 mol           |
| Total volume | : | 100 mL               |
| Konsentrasi  | : | $1 \times 10^{-4}$ M |

#### 2. Perhitungan pembuatan larutan $\beta$ -CD dalam air

|              |   |                      |
|--------------|---|----------------------|
| Massa        | : | 0,1135 gram          |
| Mr           | : | 1135 g/mol           |
| Mol          | : | 0,001 mol            |
| Total volume | : | 100 mL               |
| Konsentrasi  | : | $1 \times 10^{-3}$ M |

#### 3. Perhitungan pembuatan larutan $\beta$ -CD-NH<sub>3</sub>Cl dalam air

|              |   |                      |
|--------------|---|----------------------|
| Massa        | : | 0,1170 gram          |
| Mr           | : | 1170 g/mol           |
| Mol          | : | 0,001 mol            |
| Total volume | : | 100 mL               |
| Konsentrasi  | : | $1 \times 10^{-3}$ M |

#### 4. Perhitungan pembuatan larutan $\beta$ -CD-NH<sub>2</sub>PrCl dalam air

|              |   |                      |
|--------------|---|----------------------|
| Massa        | : | 0,1213 gram          |
| Mr           | : | 1212,6 g/mol         |
| Mol          | : | 0,001 mol            |
| Total volume | : | 100 mL               |
| Konsentrasi  | : | $1 \times 10^{-3}$ M |

#### 5. Larutan kompleks

| No. | Volume mangostin (mL) | Volume $\beta$ -CD/<br>$\beta$ -CD-NH <sub>3</sub> Cl/<br>$\beta$ -CD-NH <sub>2</sub> PrCl (mL) | Volume H <sub>2</sub> O (mL) | $[\beta\text{-CD}]/[\beta\text{-CD-NH}_3\text{Cl}]/[\beta\text{-CD-NH}_2\text{PrCl}]$ (M) |
|-----|-----------------------|---|------------------------------|---|
| 1   | 1                     | 0   | 9                            | $0 \times 10^{-4}$  |
| 2   | 1                     | 1   | 8                            | $1 \times 10^{-4}$  |
| 3   | 1                     | 2   | 7                            | $2 \times 10^{-4}$  |
| 4   | 1                     | 3   | 6                            | $3 \times 10^{-4}$  |
| 5   | 1                     | 4   | 5                            | $4 \times 10^{-4}$  |
| 6   | 1                     | 5   | 4                            | $5 \times 10^{-4}$  |
| 7   | 1                     | 6   | 3                            | $6 \times 10^{-4}$  |
| 8   | 1                     | 7   | 2                            | $7 \times 10^{-4}$  |
| 9   | 1                     | 8   | 1                            | $8 \times 10^{-4}$  |
| 10  | 1                     | 9   | 0                            | $9 \times 10^{-4}$  |

**Lampiran 4. Perhitungan penentuan konstanta asosiasi kompleks inklusi MG/ $\beta$ -CD (1 : 2)**

| [ $\beta$ -CD]<br>( $1 \times 10^{-4} M$ ) | [MG]<br>( $1 \times 10^{-5} M$ ) | Abs   | $\Delta$ Abs | $1/[\beta\text{-CD}]^2$<br>( $1 \times 10^{-8} M$ ) | $1/\Delta$ Abs |
|--|----------------------------------|-------|--------------|---|----------------|
| 0  | 1                                | 0,121 | 0,000        | 0,000   | 0,00           |
| 3  | 1                                | 0,125 | 0,004        | 3333,33   | 2,50           |
| 4  | 1                                | 0,129 | 0,008        | 0,063   | 1,250          |
| 6  | 1                                | 0,145 | 0,024        | 0,028   | 0,417          |
| 7  | 1                                | 0,153 | 0,032        | 0,020   | 0,313          |
| 8  | 1                                | 0,165 | 0,044        | 0,016   | 0,227          |
| 9  | 1                                | 0,165 | 0,044        | 0,012   | 0,227          |

Berdasarkan data tersebut diperoleh persamaan garis kompleks inklusi 1 : 2 yaitu  $y = 58,529x^2 + 16,349x - 0,0323$  dengan nilai  $R^2 = 0,9985$ . Maka diperoleh nilai konstanta asosiasi kompleks inklusi MG/ $\beta$ -CD:

$$K_a = \frac{0,0323}{58,529} \times 10^8 = 55,519 \times 10^3 M^{-2}$$

$$K_{a2} = \frac{0,0323}{16,349} \times 10^4 = 19,756 M^{-1}$$

$$K_{a1} = \frac{K_a}{K_{a2}} = \frac{55,519 \times 10^3 M^{-2}}{19,756 M^{-1}} = 2793,316 M^{-1}$$

**Lampiran 5. Perhitungan penentuan konstanta asosiasi kompleks inklusi  
MG/ $\beta$ -CD-NH<sub>3</sub>Cl (1 : 2)**

| [CD] $\times 10^{-4}$ M | [MG]<br>( $1 \times 10^{-5}$ M) | Abs   | $\Delta$ Abs | $\frac{1}{[CD]^2}$<br>$\times 10^{-8}$ M | $1/\Delta$ Abs |
|-------------------------|---------------------------------|-------|--------------|--|----------------|
| 0                       | 1                               | 0,116 | 0,000        | 0,000                                    | 0,000          |
| 2                       | 1                               | 0,133 | 0,017        | 0,250                                    | 0,588          |
| 3                       | 1                               | 0,137 | 0,021        | 0,111                                    | 0,476          |
| 4                       | 1                               | 0,142 | 0,026        | 0,063                                    | 0,385          |
| 5                       | 1                               | 0,151 | 0,035        | 0,040                                    | 0,286          |
| 7                       | 1                               | 0,166 | 0,05         | 0,020                                    | 0,200          |
| 8                       | 1                               | 0,181 | 0,065        | 0,016                                    | 0,154          |
| 9                       | 1                               | 0,187 | 0,071        | 0,012                                    | 0,141          |

Berdasarkan data tersebut diperoleh persamaan garis yang didapatkan yaitu  $y = -12,148x^2 + 5,0066x + 0,0932$  dengan nilai  $R^2 = 0,9896$ . Maka diperoleh nilai konstanta asosiasi kompleks inklusi MG/ $\beta$ -CD-NH<sub>3</sub>Cl:

$$K_a = \frac{0,0932}{12,148} \times 10^8 = 76,720 \times 10^4 M^{-2}$$

$$K_{a2} = \frac{0,0932}{5,0066} \times 10^4 = 186,154 M^{-1}$$

$$K_{a1} = \frac{K_a}{K_{a2}} = \frac{76,720 \times 10^4 M^{-2}}{186,154 M^{-1}} = 4121,337 M^{-1}$$

**Lampiran 6. Perhitungan penentuan konstanta asosiasi kompleks inklusi  
MG/ $\beta$ -CD-NH<sub>2</sub>PrCl (1 : 2)**

| [CD] $\times 10^{-4}$ M | [MG]<br>( $1 \times 10^{-5}$ M) | Abs   | $\Delta$ Abs | $\frac{1}{[CD]^2}$<br>$\times 10^{-8}$ M | $1/\Delta$ Abs |
|-------------------------|---------------------------------|-------|--------------|--|----------------|
| 0                       | 1                               | 0,124 | 0,000        | 0,000                                    | 0,000          |
| 1                       | 1                               | 0,135 | 0,011        | 1,000                                    | 0,909          |
| 2                       | 1                               | 0,156 | 0,032        | 0,250                                    | 0,313          |
| 3                       | 1                               | 0,172 | 0,048        | 0,111                                    | 0,208          |
| 4                       | 1                               | 0,198 | 0,074        | 0,063                                    | 0,135          |
| 5                       | 1                               | 0,214 | 0,090        | 0,040                                    | 0,111          |
| 6                       | 1                               | 0,235 | 0,111        | 0,028                                    | 0,090          |
| 7                       | 1                               | 0,254 | 0,13         | 0,020                                    | 0,077          |
| 8                       | 1                               | 0,271 | 0,147        | 0,016                                    | 0,068          |
| 9                       | 1                               | 0,282 | 0,158        | 0,012                                    | 0,063          |

Berdasarkan data tersebut diperoleh persamaan garis yang didapatkan yaitu  $y = -0,2984x^2 + 1,1481x + 0,0588$  dengan nilai  $R^2 = 0,998$ . Maka diperoleh nilai konstanta asosiasi kompleks inklusi MG/ $\beta$ -CD-NH<sub>2</sub>PrCl:

$$K_a = \frac{0,0588}{0,2984} \times 10^8 = 19,705 \times 10^6 M^{-2}$$

$$K_{a2} = \frac{0,0588}{1,1481} \times 10^4 = 512,150 M^{-1}$$

$$K_{a1} = \frac{K_a}{K_{a2}} = \frac{19,705 \times 10^6 M^{-2}}{512,150 M^{-1}} = 38475,201 M^{-1}$$



## Lampiran 7. Dokumentasi penelitian

|   |  |
|---|--|
|    |    |
| Pembuatan simplisia kulit manggis   | Destilasi sederhana  |
|    |    |
| Rendemen ekstrak  | Fraksi etanol : akuades  |
|   |   |
| Endapan kuning  | Spektrofotometer UV-Vis  |
|  |  |
| Melting point block   | Instrumen HPLC   |