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**Lampiran 1. Hasil determinasi tanaman daun sirsak (*Annona muricata* L.)**



**KEMENTERIAN KESEHATAN REPUBLIK INDONESIA**  
**BADAN KEBIJAKAN PEMBANGUNAN KESEHATAN**  
 BALAI BESAR PENELITIAN DAN PENGEMBANGAN  
 TANAMAN OBAT DAN OBAT TRADISIONAL  
 Jalan Lawu No. 11 Tawangmangu, Karanganyar, Jawa Tengah 57792  
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Laman b2p2toot.litbang.kemkes.go.id Surat Elektronik b2p2toot@litbang.kemkes.go.id

Nomor : KM.04.02/2/1807/2022  
 Hal : Keterangan Determinasi

27 September 2022

Yth. Dekan Fakultas Farmasi  
 Universitas Setia Budi  
 Jalan Let. Jend. Sutoyo  
 Solo 57127

Merujuk surat Saudara nomor: 999/H6-04/15.09.2022 tanggal 15 September 2022 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Pemohon : Putri Diana  
 Nama Sampel : Sirsak  
 Sampel : Tanaman Segar  
 Spesies : *Annona muricata* L.  
 Sinonim : *Annona macrocarpa* Wercklé  
 Familia : Annonaceae  
 Penanggung Jawab : Nina Kurnianingrum, S.Si.

Hasil determinasi tersebut hanya mencakup sampel tanaman yang telah dikirimkan ke dan/atau berasal dari B2P2TOOT.

Atas perhatian Saudara, kami sampaikan terima kasih.

Kepala Balai Besar Penelitian dan  
 Pengembangan Tanaman Obat dan Obat  
 Tradisional,



**Akhmad Saikhu, S.KM., M.Sc.PH**

**Lampiran 2. Proses pembuatan serbuk daun sirsak (*Annona muricata* Linn.)**



Pemanenan dan sortasi basah



Pencucian



Perajangan



Pengeringan



Sortasi kering



Penggilingan



Pengayakan



Serbuk halus

**Lampiran 3. Proses pembuatan ekstrak daun sirsak (*Annona muricata* Linn.)**

Etanol 96%



Perendaman daun sirsak



Hasil filtrate



Penyarian dengan kain flanel



Proses evaporasi



Hasil ekstrak kental

**Lampiran 4. Susut pengeringan dengan (Moisture Balance)**

Replikasi ke-1 (8,9%)



Replikasi ke-2 (8,7%)



Replikasi ke-3 (9,0%)

Lampiran 5. Kadar air serbuk (Sterling Bidwel)



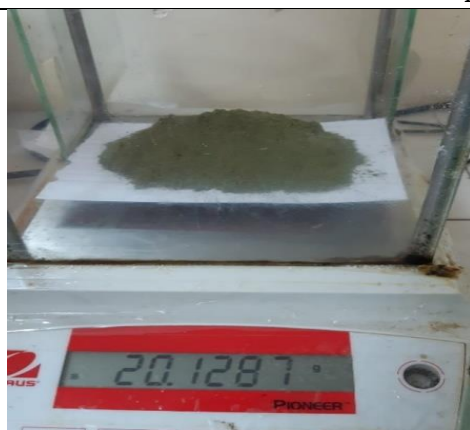
Penjenuhan toluene



Destilasi toluene

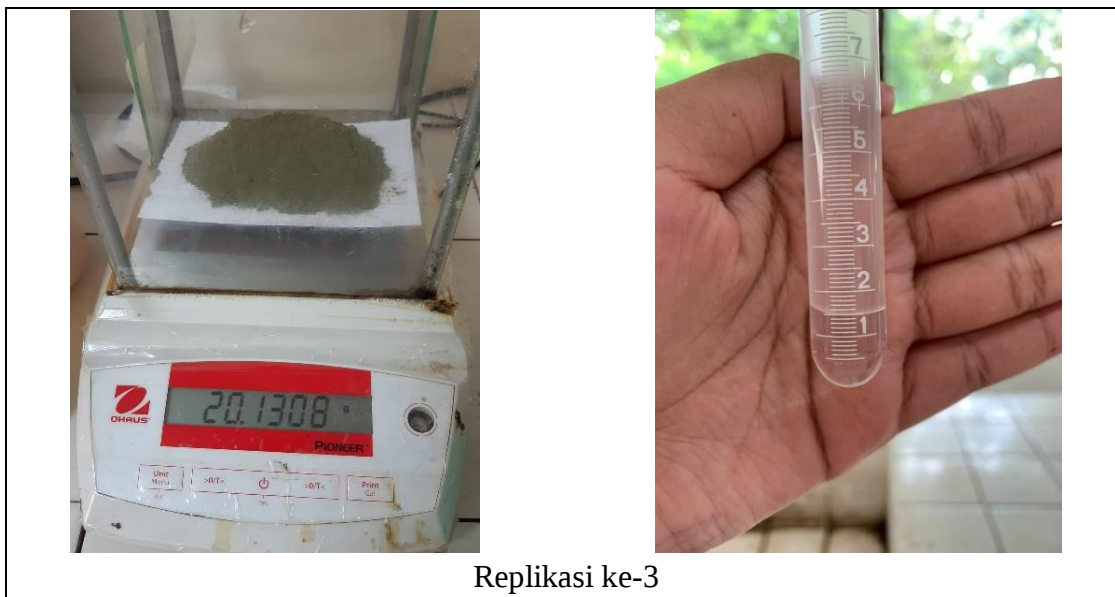


Replikasi ke-1



Replikasi ke-2





**Lampiran 6. Kadar air ekstrak (Gravimetri)**

Oven



Desikator



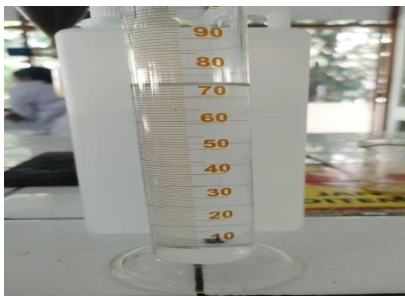
Sebelum pengeringan



Sesudah pengeringan

**Lampiran 7. Pembuatan fraksi**

Penimbangan ekstrak



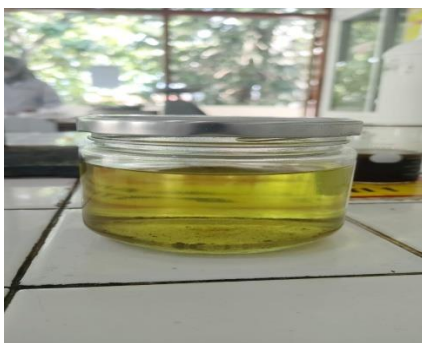
Dilarutkan dengan aquades

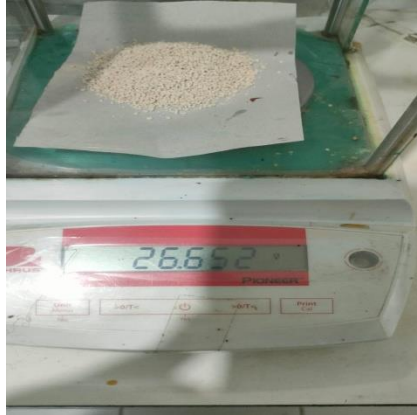


Diaduk sampai terlarut semua



Masukan dalam corong pisah

Masukkan pelarut *n*-heksan  
ulangi 3xPisahkan fase air dan *n*-heksan  
kemudian uapkan, cara sama  
berlaku untuk etil asetat.

**Lampiran 8. Pembuatan media**

Penimbangan bahan



Mengukur aquadest



Media dipanaskan



Masukan dalam tabung reaksi masing-masing 15 mL



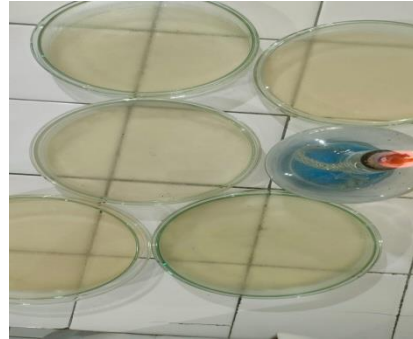
Media dibungkus kemudian di autoclave



Cawan petri di bungkus dan dioven



Media dikeluarkan dari  
autoclave



Masukan media cair dalam cawan  
petri steril, diamkan hingga  
memadat

**Lampiran 9. Pembuatan konsentrasi**

Penimbangan ekstrak kental



Mengukur pelarut DMSO 5%



Dilarutkan dengan DMSO 5%



Ekstrak dan fraksi dengan konsentrasi 10%, 5%, dan 2,5%

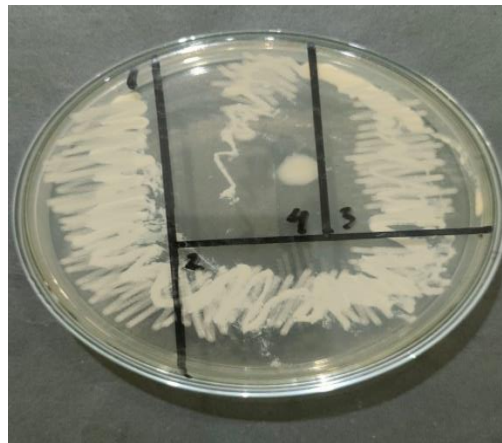
### Lampiran 10. Identifikasi jamur



Membuat kuadran pengoresan



Media

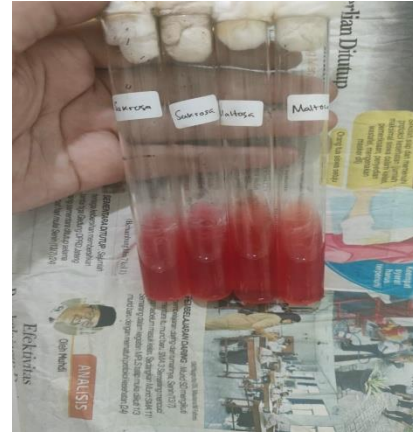


Hasil goresan

### Lampiran 11 . Uji gula-gula



Media laktosa dan glukosa



Media sukrosa dan maltosa



Penambahan satu ose jamur ke dalam setiap tabung, inkubasi 24 jam



Hasil uji gula-gula pada laktosa



Hasil uji gula-gula pada glukosa



Hasil uji gula-gula pada sukrosa



Hasil uji gula-gula pada maltosa

**Lampiran 12. Uji difusi**

Menyiapkan cawan petri steril



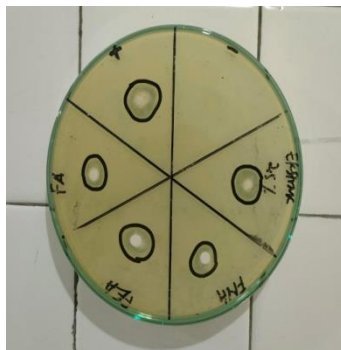
Menyiapkan cakram steril

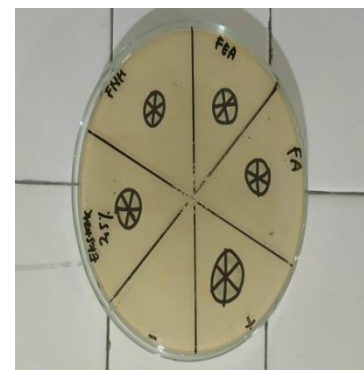
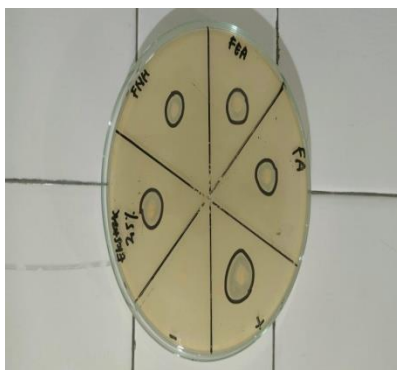
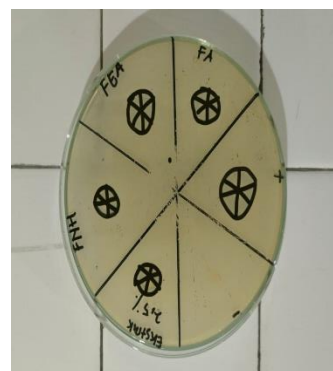
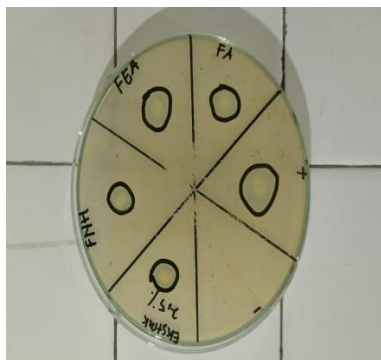


Menanam cakram pada media agar



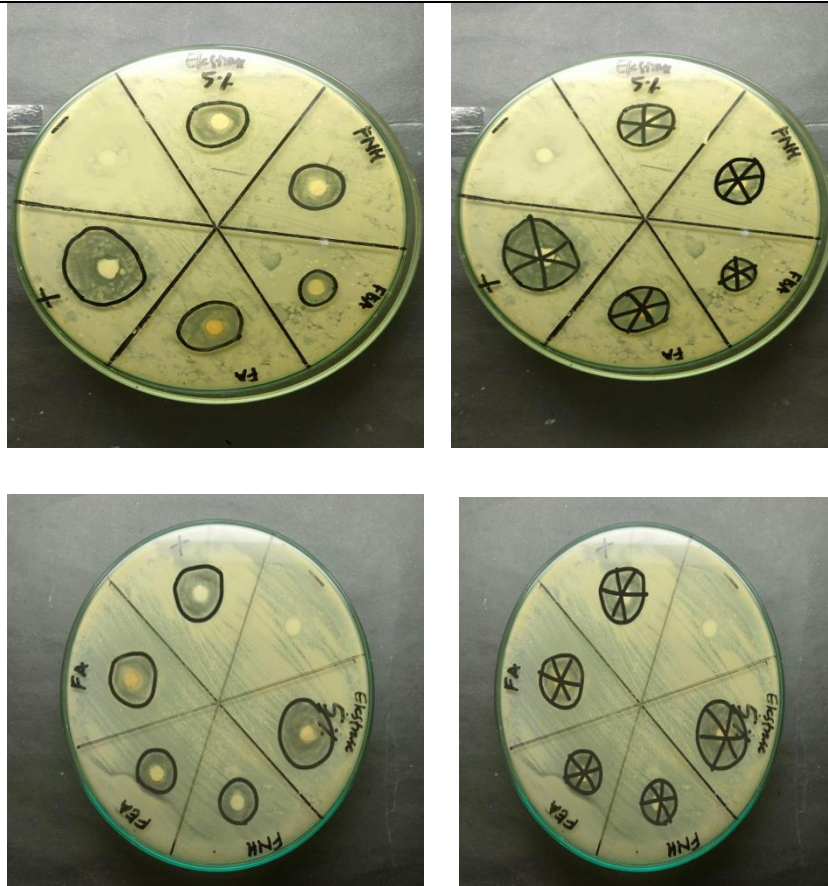
Menginkubasi media pada inkubator



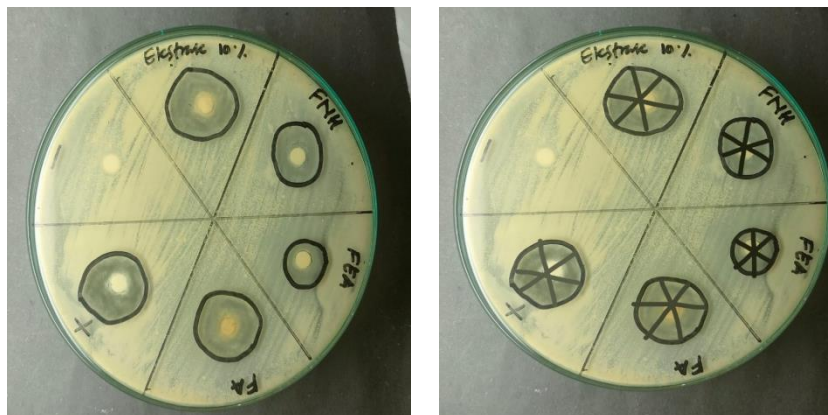


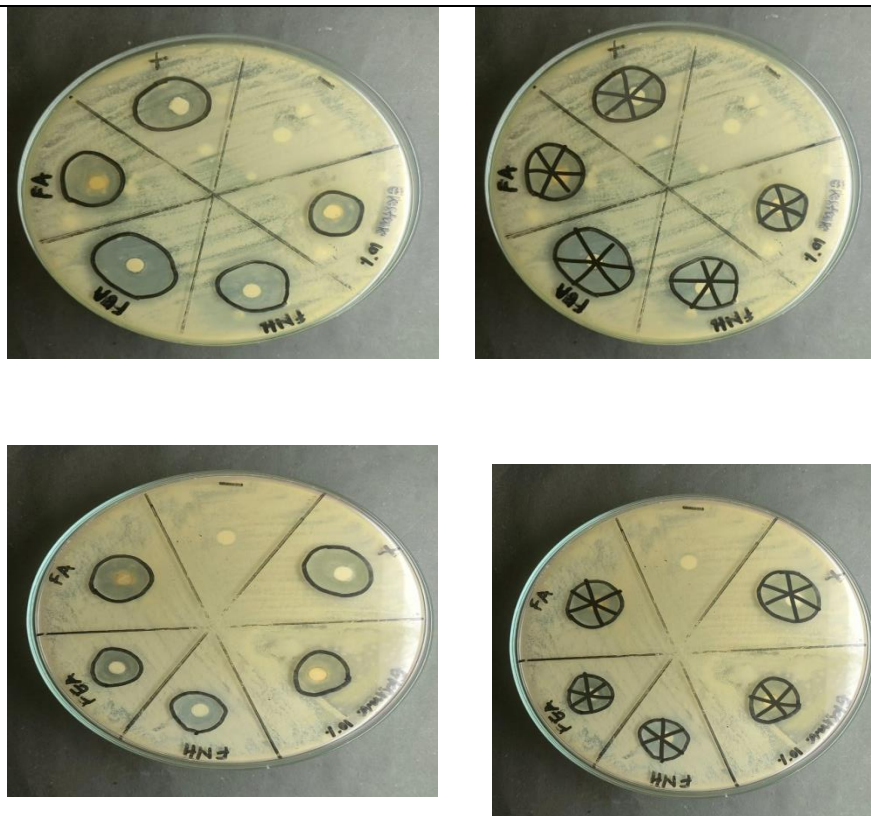
Hasil uji difusi konsentrasi 2,5% pada replikasi 1,2, dan 3





Hasil uji difusi konsentrasi 5% pada replikasi 1, 2, dan 3.

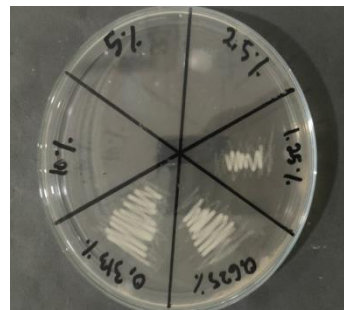




Hasil uji difusi konsentrasi 10% pada replikasi 1, 2, dan 3.

**Lampiran 13. Uji dilusi**

Dilusi replikasi 1



Inokulasi replikasi 1



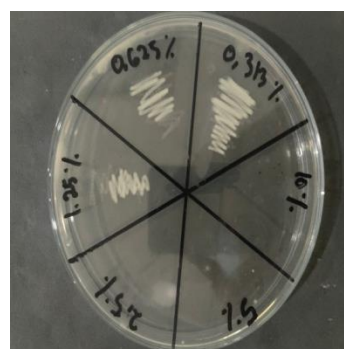
Dilusi replikasi 2



Inokulasi replikasi 2



Dilusi replikasi 3



Inokulasi replikasi 3

**Lampiran 14. Hasil pengujian KLT**

| Uji       | Baku       | Fase diam  | Fase gerak                          | Reagen semprot     | Warna bercak             |                     |                | Rf baku | Rf               | Ket |
|-----------|------------|------------|-------------------------------------|--------------------|--------------------------|---------------------|----------------|---------|------------------|-----|
|           |            |            |                                     |                    | Pereaksi semprot         | UV 254 nm           | UV 366 nm      |         |                  |     |
| Flavonoid | Quars etin | Silika gel | Kloroform : metanol (5:5)           | Sitrobotat         | Bercak kuning hijau      | Kuning Jingga       | Biru merah     | 0,87    | 0,25; 0,85; 0,92 | +   |
| Alkaloid  | Piperin    | Silika gel | Toluen : etil as : air (7:3:1)      | Dragendrof         | Kuning /jingga kehijauan | Merah muda keunguan | Merah kebiruan | 0,92    | 0,31; 0,90       | +   |
| Tanin     | Asam galat | Silika gel | Metanol : air (6:4)                 | FeCl <sub>3</sub>  | Hitam abu                | Biru keunguan       | Hitam keunguan | 0,94    | 0,94             | +   |
| Saponin   | Sapogenin  | Silika gel | Kloroform : metanol : air (65:35:2) | Libermann burchard | Kekuningan               | Keunguan            | Biru           | 0,96    | 0,95             | +   |

**Lampiran 15. Perhitungan presentase rendemen daun sirsak kering terhadap daun basah.**

| Bobot basah (kg) | Bobot kering (kg) | Rendemen (%) |
|------------------|-------------------|--------------|
| 8                | 4,1               | 51,25%       |

% rendemen daun kering terhadap daun basah

$$= \frac{\text{Bobot daun kering (kg)}}{\text{Bobot daun basah (kg)}} \times 100\%$$

$$= \frac{4,1\text{kg}}{8,0\text{ kg}} \times 100\%$$

$$= 51,25\%$$

**Lampiran 16. Perhitungan presentase rendemen serbuk terhadap daun kering.**

| Bobot daun kering(kg) | Bobot serbuk (kg) | Rendemen (%) |
|-----------------------|-------------------|--------------|
| 4,1                   | 3,8               | 92,68%       |

% rendemen daun kering terhadap daun basah

$$= \frac{\text{Bobot daun kering (kg)}}{\text{Bobot daun basah (kg)}} \times 100\%$$

$$= \frac{3,8\text{kg}}{4,1\text{kg}} \times 100\%$$

$$= 92,68\%$$

**Lampiran 17. Perhitungan presentase rendemen ekstrak daun sirsak**

| Bobot serbuk (gram) | Bobot ekstrak (gram) | Rendemen (%) |
|---------------------|----------------------|--------------|
| 1000                | 127                  | 12,70%       |

% rendemen daun kering terhadap daun basah

$$= \frac{\text{Bobot daun kering (kg)}}{\text{Bobot daun basah (kg)}} \times 100\%$$

$$= \frac{127\text{kg}}{1000\text{kg}} \times 100\%$$

$$= 12,70\%$$

**Lampiran 18. Perhitungan kadar air dengan *sterling bidwell***

| Bobot serbuk (gram)     | Volume terbaca (mL) | Kadar air (%)    |
|-------------------------|---------------------|------------------|
| 20,1261                 | 1,7                 | 8,44             |
| 20,1287                 | 1,6                 | 7,94             |
| 20,1308                 | 1,5                 | 7,45             |
| <b>Rata-rata (%±SD)</b> |                     | <b>7,94±0,49</b> |

$$\begin{aligned}
 \text{Replikasi 1} &= \frac{\text{Volume terbaca (mL)}}{\text{Bobot sampel (g)}} \times 100\% \\
 &= \frac{1,7 \text{ mL}}{20,1261} \times 100\% \\
 &= 8,44\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Replikasi 2} &= \frac{\text{Volume terbaca (mL)}}{\text{Bobot sampel (g)}} \times 100\% \\
 &= \frac{1,6 \text{ mL}}{20,1287} \times 100\% \\
 &= 7,94\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Replikasi 3} &= \frac{\text{Volume terbaca (mL)}}{\text{Bobot sampel (g)}} \times 100\% \\
 &= \frac{1,5 \text{ mL}}{20,1308} \times 100\% \\
 &= 7,45\%
 \end{aligned}$$

Rata-rata presentase kadar air serbuk metode *sterling bidwell*

$$\begin{aligned}
 &= \frac{\text{replikasi 1} + \text{replikasi 2} + \text{replikasi 3}}{3} \\
 &= \frac{8,44\% + 7,94\% + 7,47\%}{3} \\
 &= 7,94\%
 \end{aligned}$$

**Lampiran 19. Perhitungan kadar air ekstrak daun sirsak dengan gravimetri**

| No                      | Berat krus kosong (gram) | Berat krus kosong + ekstrak sebelum di oven (gram) | Bobot awal (gram) | Berat krus + ekstrak setelah di oven (gram) | Bobot akhir (gram) | Kadar air (%)    |
|-------------------------|--------------------------|----------------------------------------------------|-------------------|---------------------------------------------|--------------------|------------------|
| 1.                      | 20,3780                  | 22,4883                                            | 2,1103            | 22,4038                                     | 1,9528             | 8,74             |
| 2.                      | 20,4976                  | 22,5688                                            | 2,0712            | 22,4887                                     | 1,8911             | 8,69             |
| 3.                      | 20,3132                  | 22,3338                                            | 2,0260            | 22,2646                                     | 1,8516             | 8,61             |
| <b>Rata-rata (%±SD)</b> |                          |                                                    |                   |                                             |                    | <b>8,84±0,06</b> |

## 1. Perhitungan replikasi 1

- Bobot krus kosong = 20,3780 g  
Bobot krus + sampel = 22,4883 g  
Sampel = 22,4883 g – 20,3780 g  
= 2,1103 g (bobot awal)
- Bobot krus + sampel akhir = 22,4038 g  
Sampel = 22,4038 g – 22,3780 g  
= 1,9528 g (bobot akhir)

$$\begin{aligned}\text{Replikasi 1} &= \frac{(\text{Bobot awal} - \text{bobot akhir})}{\text{Bobot awal}} \times 100\% \\ &= \frac{2,1103 \text{ g} - 1,9258 \text{ g}}{2,1103 \text{ g}} \times 100\% \\ &= 8,74\%\end{aligned}$$

## 2. Perhitungan replikasi 2

- Bobot krus kosong = 22,5688 g  
Bobot krus + sampel = 20,4976 g  
Sampel = 22,5688 g – 20,4976 g  
= 2,0712 (bobot awal)
- Bobot krus + sampel akhir = 22,4887 g  
Sampel = 22,4887 g – 22,5688 g  
= 1,8911 g (bobot akhir)

$$\begin{aligned}\text{Replikasi 2} &= \frac{(\text{Bobot awal} - \text{bobot akhir})}{\text{Bobot awal}} \times 100\% \\ &= \frac{2,0712 \text{ g} - 1,8911 \text{ g}}{2,0712 \text{ g}} \times 100\% \\ &= 8,69\%\end{aligned}$$

## 3. Perhitungan replikasi 3

- Bobot krus kosong = 20,3132 g  
Bobot krus + sampel = 22,3338 g  
Sampel = 22,3338 g – 20,3132 g

$$\begin{aligned}
 &= 2,0260 \text{ g (bobot awal)} \\
 \bullet \text{ Bobot krus + sampel akhir} &= 22,2646 \text{ g} \\
 \text{Sampel} &= 22,2646 \text{ g} - 20,3132 \text{ g} \\
 &= 1,8516 \text{ g (bobot akhir)} \\
 \text{Replikasi 3} &= \frac{(\text{Bobot awal} - \text{bobot akhir})}{\text{Bobot awal}} \times 100\% \\
 &= \frac{2,0260 \text{ g} - 1,8516 \text{ g}}{2,0260 \text{ g}} \times 100\% \\
 &= 8,61\%
 \end{aligned}$$

**Lampiran 20. Perhitungan presentase rendemen fraksi**

| Pelarut            | Hasil (gram) | Rendemen (%) |
|--------------------|--------------|--------------|
| Fraksi n-heksana   | 2,553        | 23,53        |
| Fraksi etil asetat | 3,578        | 32,97        |
| Fraksi air         | 4,156        | 38,30        |

1. % rendemen fraksi n-heksan
 
$$\begin{aligned}
 &= \frac{\text{Bobot hasil fraksi (gr)}}{\text{Berat ekstrak pekat (gr)}} \times 100\% \\
 &= \frac{2,553 \text{ gr}}{10,850} \times 100\% \\
 &= 23,53\%
 \end{aligned}$$
2. % rendemen fraksi etil asetat
 
$$\begin{aligned}
 &= \frac{\text{Bobot hasil fraksi (gr)}}{\text{Berat ekstrak pekat (gr)}} \times 100\% \\
 &= \frac{3,578 \text{ gr}}{10,850} \times 100\% \\
 &= 32,97\%
 \end{aligned}$$
3. % rendemen fraksi air
 
$$\begin{aligned}
 &= \frac{\text{Bobot hasil fraksi (gr)}}{\text{Berat ekstrak pekat (gr)}} \times 100\% \\
 &= \frac{4,156 \text{ gr}}{10,850} \times 100\% \\
 &= 38,30\%
 \end{aligned}$$

**Lampiran 21. Perhitungan pembuatan media SDA dan SGC**

1. Perhitungan pembuatan media SDA

$$\text{Penimbangan bahan} = \frac{600 \text{ mL}}{1000 \text{ mL}} \times 65 \text{ gram} = 39 \text{ gram}$$

2. Perhitungan pembuatan media SGC

$$\text{Penimbangan bahan} = \frac{50 \text{ mL}}{1000 \text{ mL}} \times 15 \text{ gram} = 0,75 \text{ gram}$$

**Lampiran 22.. Perhitungan pembuatan media gula-gula**

$$1. \text{ Ekstrak daging} = \frac{50 \text{ mL}}{1000 \text{ mL}} \times 3000 \text{ mg} = 150 \text{ mg} = 0,3 \text{ gr}$$

$$2. \text{ Pepton} = \frac{50 \text{ mL}}{1000 \text{ mL}} \times 5000 \text{ mg} = 250 \text{ mg} = 0,25 \text{ gr}$$

$$3. \text{ Phenol red 1\%} = \frac{100 \text{ mL}}{1000 \text{ mL}} \times 1 \text{ mL} = 0,1 \text{ mL}$$

$$4. \text{ Aquadest} = 50 \text{ mL}$$

$$5. \text{ KH gula} = \frac{50 \text{ mL}}{1000 \text{ mL}} \times 5000 \text{ mg} = 500 \text{ mg} = 0,5 \text{ gr}$$

**Lampiran 23. Perhitungan zona hambat uji difusi**

| Sampel                  | Konsentrasi (%) | Daya Hambat (mm) |       |       |                    |
|-------------------------|-----------------|------------------|-------|-------|--------------------|
|                         |                 | Replikasi        |       |       | Rata-rata (mm) ±SD |
|                         |                 | 1                | 2     | 3     |                    |
| Ekstrak                 | 10              | 19,86            | 16,96 | 16,11 | 17,64 ± 1,93       |
|                         | 5               | 17,63            | 16,2  | 18,13 | 17,32 ± 1,08       |
|                         | 2,5             | 9,5              | 8,08  | 10,2  | 9,26 ± 1,08        |
| Fraksi <i>n</i> -heksan | 10              | 23               | 20,11 | 21,03 | 21,38 ± 1,11       |
|                         | 5               | 13,63            | 15,2  | 16,2  | 15,1 ± 1,44        |
|                         | 2,5             | 9,3              | 10,93 | 9,5   | 9,43 ± 1,43        |
| Fraksi etil asetat      | 10              | 22,63            | 23,35 | 21,3  | 22,43 ± 1,04       |
|                         | 5               | 18,33            | 17,63 | 15,1  | 17,02 ± 1,67       |
|                         | 2,5             | 11,16            | 9,95  | 8,86  | 9,99 ± 1,38        |
| Fraksi air              | 10              | 19,86            | 17,5  | 17,18 | 18,18 ± 1,46       |
|                         | 5               | 15,1             | 15,1  | 11,95 | 14,04 ± 1,82       |
|                         | 2,5             | 7,26             | 10,26 | 9     | 8,84 ± 1,51        |

|                                  |   |       |       |       |              |
|----------------------------------|---|-------|-------|-------|--------------|
| Kontrol positif<br>(ketokonazol) | 2 | 20,11 | 22,63 | 23,61 | 24,18 ± 1,90 |
|                                  |   | 18,33 | 19,86 | 17,18 | 18,45 ± 1,34 |
|                                  |   | 20,8  | 19,86 | 18,33 | 19,66 ± 1,24 |
| Kontrol negatif<br>(DMSO 5%)     | 5 | 0     | 0     | 0     | 0            |

1. Perhitungan zona hambat konsentrasi 2,5%

- Kontrol positif :

$$R1 = \frac{19,2 \text{ mm} + 19,2 \text{ mm} + 2,85 \text{ mm}}{3} = 20,8 \text{ mm}$$

$$R2 = \frac{18,55 \text{ mm} + 19,5 \text{ mm} + 21,55 \text{ mm}}{3} = 19,86 \text{ mm}$$

$$R3 = \frac{16,85 \text{ mm} + 20,25 \text{ mm} + 17,19 \text{ mm}}{3} = 18,33 \text{ mm}$$

- Ekstrak :

$$R1 = \frac{9,4 \text{ mm} + 10,05 \text{ mm} + 9,15 \text{ mm}}{3} = 9,5 \text{ mm}$$

$$R2 = \frac{9,15 \text{ mm} + 8,15 \text{ mm} + 9,3 \text{ mm}}{3} = 8,08 \text{ mm}$$

$$R3 = \frac{10 \text{ mm} + 10,15 \text{ mm} + 10,45 \text{ mm}}{3} = 10,2 \text{ mm}$$

- Fraksi n-heksana:

$$R1 = \frac{9,5 \text{ mm} + 9,5 \text{ mm} + 9 \text{ mm}}{3} = 9,3 \text{ mm}$$

$$R2 = \frac{11,15 \text{ mm} + 10,5 \text{ mm} + 11,15 \text{ mm}}{3} = 10,93 \text{ mm}$$

$$R3 = \frac{9,4 \text{ mm} + 10,05 \text{ mm} + 10,4 \text{ mm}}{3} = 9,5 \text{ mm}$$

- Fraksi etil asetat:

$$R1 = \frac{11,5 \text{ mm} + 10,5 \text{ mm} + 11,5 \text{ mm}}{3} = 11,16 \text{ mm}$$

$$R2 = \frac{9,05 \text{ mm} + 10,4 \text{ mm} + 10,4 \text{ mm}}{3} = 9,95 \text{ mm}$$

$$R3 = \frac{9,15 \text{ mm} + 8,15 \text{ mm} + 9,3 \text{ mm}}{3} = 8,86 \text{ mm}$$

- Fraksi air

$$R1 = \frac{7,85 \text{ mm} + 7,85 \text{ mm} + 6,1 \text{ mm}}{3} = 7,26 \text{ mm}$$

$$R2 = \frac{10,4 \text{ mm} + 11 \text{ mm} + 9,4 \text{ mm}}{3} = 10,26 \text{ mm}$$

$$R3 = \frac{8,5 \text{ mm} + 8,5 \text{ mm} + 10 \text{ mm}}{3} = 9 \text{ mm}$$

## 2. Konsentrasi 5%

- Kontrol positif :

$$R1 = \frac{16,85 \text{ mm} + 20,25 \text{ mm} + 17,9 \text{ mm}}{3} = 18,33 \text{ mm}$$

$$R2 = \frac{18,55 \text{ mm} + 19,5 \text{ mm} + 21,55 \text{ mm}}{3} = 19,86 \text{ mm}$$

$$R3 = \frac{17,35 \text{ mm} + 116,5 \text{ mm} + 17,7 \text{ mm}}{3} = 17,18 \text{ mm}$$

- Ekstrak :

$$R1 = \frac{17,6 \text{ mm} + 17,6 \text{ mm} + 17,7 \text{ mm}}{3} = 17,63 \text{ mm}$$

$$R2 = \frac{15,85 \text{ mm} + 14,5 \text{ mm} + 18,25 \text{ mm}}{3} = 16,2 \text{ mm}$$

$$R3 = \frac{16,6 \text{ mm} + 19,18,55 \text{ mm} + 19,25 \text{ mm}}{3} = 18,13 \text{ mm}$$

- Fraksi n-heksana :

$$R1 = \frac{12,6 \text{ mm} + 12,8 \text{ mm} + 15,5 \text{ mm}}{3} = 13,63 \text{ mm}$$

$$R2 = \frac{13,75 \text{ mm} + 16,18 \text{ mm} + 14,7 \text{ mm}}{3} = 15,2 \text{ mm}$$

$$R3 = \frac{15,85 \text{ mm} + 14,5 \text{ mm} + 18,25 \text{ mm}}{3} = 16,2 \text{ mm}$$

- Fraksi etil asetat :

$$R1 = \frac{16,85 \text{ mm} + 20,25 \text{ mm} + 17,19 \text{ mm}}{3} = 18,33 \text{ mm}$$

$$R2 = \frac{15,5 \text{ mm} + 17,3 \text{ mm} + 18,8 \text{ mm}}{3} = 17,63 \text{ mm}$$

$$R3 = \frac{13,75 \text{ mm} + 16,18 \text{ mm} + 14,7 \text{ mm}}{3} = 15,1 \text{ mm}$$

- Fraksi air :

$$R1 = \frac{13,75 \text{ mm} + 16,18 \text{ mm} + 14,7 \text{ mm}}{3} = 15,1 \text{ mm}$$

$$R2 = \frac{13,75 \text{ mm} + 16,18 \text{ mm} + 14,7 \text{ mm}}{3} = 15,1 \text{ mm}$$

$$R3 = \frac{12,7 \text{ mm} + 12,8 \text{ mm} + 15,5 \text{ mm}}{3} = 11,95 \text{ mm}$$

### 3. Konsentrasi 10%

- Kontrol positif :

$$R1 = \frac{20,65 \text{ mm} + 18,8 \text{ mm} + 20,9 \text{ mm}}{3} = 20,11 \text{ mm}$$

$$R2 = \frac{22,5 \text{ mm} + 22,2 \text{ mm} + 23,3 \text{ mm}}{3} = 22,63 \text{ mm}$$

$$R3 = \frac{2,5 \text{ mm} + 24,85 \text{ mm} + 24,5 \text{ mm}}{3} = 23,61 \text{ mm}$$

- Ekstrak:

$$R1 = \frac{18,55 \text{ mm} + 19,5 \text{ mm} + 21,55 \text{ mm}}{3} = 19,86 \text{ mm}$$

$$R2 = \frac{15 \text{ mm} + 19,7 \text{ mm} + 16,2 \text{ mm}}{3} = 16,96 \text{ mm}$$

$$R3 = \frac{16,6 \text{ mm} + 18,55 \text{ mm} + 19,25 \text{ mm}}{3} = 19,86 \text{ mm}$$

- Fraksi n-heksan:

$$R1 = \frac{20,35 \text{ mm} + 20,85 \text{ mm} + 27,8 \text{ mm}}{3} = 23 \text{ mm}$$

$$R2 = \frac{20,65 \text{ mm} + 18,8 \text{ mm} + 20,9 \text{ mm}}{3} = 20,11 \text{ mm}$$

$$R3 = \frac{18,55 \text{ mm} + 20,75 \text{ mm} + 23,8 \text{ mm}}{3} = 21,3 \text{ mm}$$

- Fraksi etil asetat:

$$R1 = \frac{22,5 \text{ mm} + 22,2 \text{ mm} + 23,3 \text{ mm}}{3} = 22,63 \text{ mm}$$

$$R2 = \frac{23,5 \text{ mm} + 23,5 \text{ mm} + 23,05 \text{ mm}}{3} = 23,35 \text{ mm}$$

$$R3 = \frac{22,5 \text{ mm} + 22,2 \text{ mm} + 23,3 \text{ mm}}{3} = 22,63 \text{ mm}$$

- Fraksi air :

$$R1 = \frac{16,6 \text{ mm} + 18,55 \text{ mm} + 19,25 \text{ mm}}{3} = 19,86 \text{ mm}$$

$$R2 = \frac{16,65 \text{ mm} + 16,5 \text{ mm} + 19,5 \text{ mm}}{3} = 17,5 \text{ mm}$$

$$R3 = \frac{17,35 \text{ mm} + 16,5 \text{ mm} + 17,7 \text{ mm}}{3} = 17,18 \text{ mm}$$

**Lampiran 24. Hasil analisis data uji difusi**

| Tests of Normality              |                                 |    |       |              |    |      |
|---------------------------------|---------------------------------|----|-------|--------------|----|------|
|                                 | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|                                 | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
| Standardized Residual for HASIL | .068                            | 45 | .200* | .980         | 45 | .606 |

| Levene's Test of Equality of Error Variances <sup>a</sup> |     |     |      |
|-----------------------------------------------------------|-----|-----|------|
| Dependent Variable: DAYA HAMBAT                           |     |     |      |
| F                                                         | df1 | df2 | Sig. |
| 1.323                                                     | 14  | 30  | .252 |

| Tests of Between-Subjects Effects |                         |    |             |          |      |
|-----------------------------------|-------------------------|----|-------------|----------|------|
| Dependent Variable: DAYA HAMBAT   |                         |    |             |          |      |
| Source                            | Type III Sum of Squares | df | Mean Square | F        | Sig. |
| Corrected Model                   | 807.390 <sup>a</sup>    | 14 | 57.671      | 37.637   | .000 |
| Intercept                         | 12104.840               | 1  | 12104.840   | 7899.853 | .000 |
| KONSENTRASI                       | 492.733                 | 2  | 246.366     | 160.783  | .000 |
| SAMPEL                            | 258.840                 | 4  | 64.710      | 42.231   | .000 |
| KONSENTRASI * SAMPEL              | 55.817                  | 8  | 6.977       | 4.553    | .001 |
| Error                             | 45.969                  | 30 | 1.532       |          |      |
| Total                             | 12958.199               | 45 |             |          |      |
| Corrected Total                   | 853.359                 | 44 |             |          |      |

a. R Squared = .946 (Adjusted R Squared = .921)

Dependent Variable: DAYA HAMBAT

Tukey HSD

| (I) SAMPEL           | (J) SAMPEL       | Mean<br>Difference (I-<br>J) | Std. Error | Sig. | 95% Confidence Interval |             |
|----------------------|------------------|------------------------------|------------|------|-------------------------|-------------|
|                      |                  |                              |            |      | Lower Bound             | Upper Bound |
| EKSTRAK              | FRAKSI N-HEKSANA | .5233                        | .58353     | .896 | -1.1693                 | 2.2159      |
|                      | FRAKSI ETIL      | -1.9600*                     | .58353     | .017 | -3.6526                 | -.2674      |
|                      | ASETAT           |                              |            |      |                         |             |
|                      | FRAKSI AIR       | .9400                        | .58353     | .502 | -.7526                  | 2.6326      |
| FRAKSI N-<br>HEKSANA | KONTROL POSITIF  | -5.5811*                     | .58353     | .000 | -7.2737                 | -3.8885     |
|                      | EKSTRAK          | -.5233                       | .58353     | .896 | -2.2159                 | 1.1693      |
|                      | FRAKSI ETIL      | -2.4833*                     | .58353     | .002 | -4.1759                 | -.7907      |
|                      | ASETAT           |                              |            |      |                         |             |
| FRAKSI ETIL          | FRAKSI AIR       | .4167                        | .58353     | .952 | -1.2759                 | 2.1093      |
|                      | KONTROL POSITIF  | -6.1044*                     | .58353     | .000 | -7.7970                 | -4.4119     |
|                      | EKSTRAK          | 1.9600*                      | .58353     | .017 | .2674                   | 3.6526      |
|                      | FRAKSI N-HEKSANA | 2.4833*                      | .58353     | .002 | .7907                   | 4.1759      |
| ASETAT               | FRAKSI AIR       | 2.9000*                      | .58353     | .000 | 1.2074                  | 4.5926      |
|                      | KONTROL POSITIF  | -3.6211*                     | .58353     | .000 | -5.3137                 | -1.9285     |
|                      | EKSTRAK          | -.9400                       | .58353     | .502 | -2.6326                 | .7526       |
|                      | FRAKSI N-HEKSANA | -.4167                       | .58353     | .952 | -2.1093                 | 1.2759      |
| FRAKSI AIR           | FRAKSI ETIL      | -2.9000*                     | .58353     | .000 | -4.5926                 | -1.2074     |
|                      | ASETAT           |                              |            |      |                         |             |
|                      | KONTROL POSITIF  | -6.5211*                     | .58353     | .000 | -8.2137                 | -4.8285     |
|                      | EKSTRAK          | 5.5811*                      | .58353     | .000 | 3.8885                  | 7.2737      |
| KONTROL<br>POSITIF   | FRAKSI N-HEKSANA | 6.1044*                      | .58353     | .000 | 4.4119                  | 7.7970      |
|                      | FRAKSI ETIL      | 3.6211*                      | .58353     | .000 | 1.9285                  | 5.3137      |
|                      | ASETAT           |                              |            |      |                         |             |
|                      | FRAKSI AIR       | 6.5211*                      | .58353     | .000 | 4.8285                  | 8.2137      |

**DAYA HAMBAT**

Tukey HSD

| SAMPEL           | N | Subset  |         |         |
|------------------|---|---------|---------|---------|
|                  |   | 1       | 2       | 3       |
| FRAKSI AIR       | 9 | 14.2456 |         |         |
| FRAKSI N-HEKSANA | 9 | 14.6622 |         |         |
| EKSTRAK          | 9 | 15.1856 |         |         |
| FRAKSI ETIL      | 9 |         | 17.1456 |         |
| ASETAT           | 9 |         |         | 20.7667 |
| KONTROL POSITIF  | 9 |         |         |         |
| Sig.             |   | .502    | 1.000   | 1.000   |

Dependent Variable: DAYA HAMBAT

Tukey HSD

| (I)         | (J)         | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|-------------|-------------|-----------------------|------------|------|-------------------------|-------------|
|             |             |                       |            |      | Lower Bound             | Upper Bound |
| KONSENTRASI | KONSentrasi |                       |            |      |                         |             |
|             | ASI         |                       |            |      |                         |             |
| 10%         | 5%          | 4.2340*               | .45200     | .000 | 3.1197                  | 5.3483      |
|             | 2,5 %       | 8.1027*               | .45200     | .000 | 6.9884                  | 9.2170      |
| 5%          | 10%         | -4.2340*              | .45200     | .000 | -5.3483                 | -3.1197     |
|             | 2,5 %       | 3.8687*               | .45200     | .000 | 2.7544                  | 4.9830      |
| 2,5 %       | 10%         | -8.1027*              | .45200     | .000 | -9.2170                 | -6.9884     |
|             | 5%          | -3.8687*              | .45200     | .000 | -4.9830                 | -2.7544     |

**DAYA HAMBAT**

Tukey HSD

| KONSENTRAS<br>I | N  | Subset  |         |         |
|-----------------|----|---------|---------|---------|
|                 |    | 1       | 2       | 3       |
| 2,5 %           | 15 | 12.4107 |         |         |
| 5%              | 15 |         | 16.2793 |         |
| 10%             | 15 |         |         | 20.5133 |
| Sig.            |    | 1.000   | 1.000   | 1.000   |