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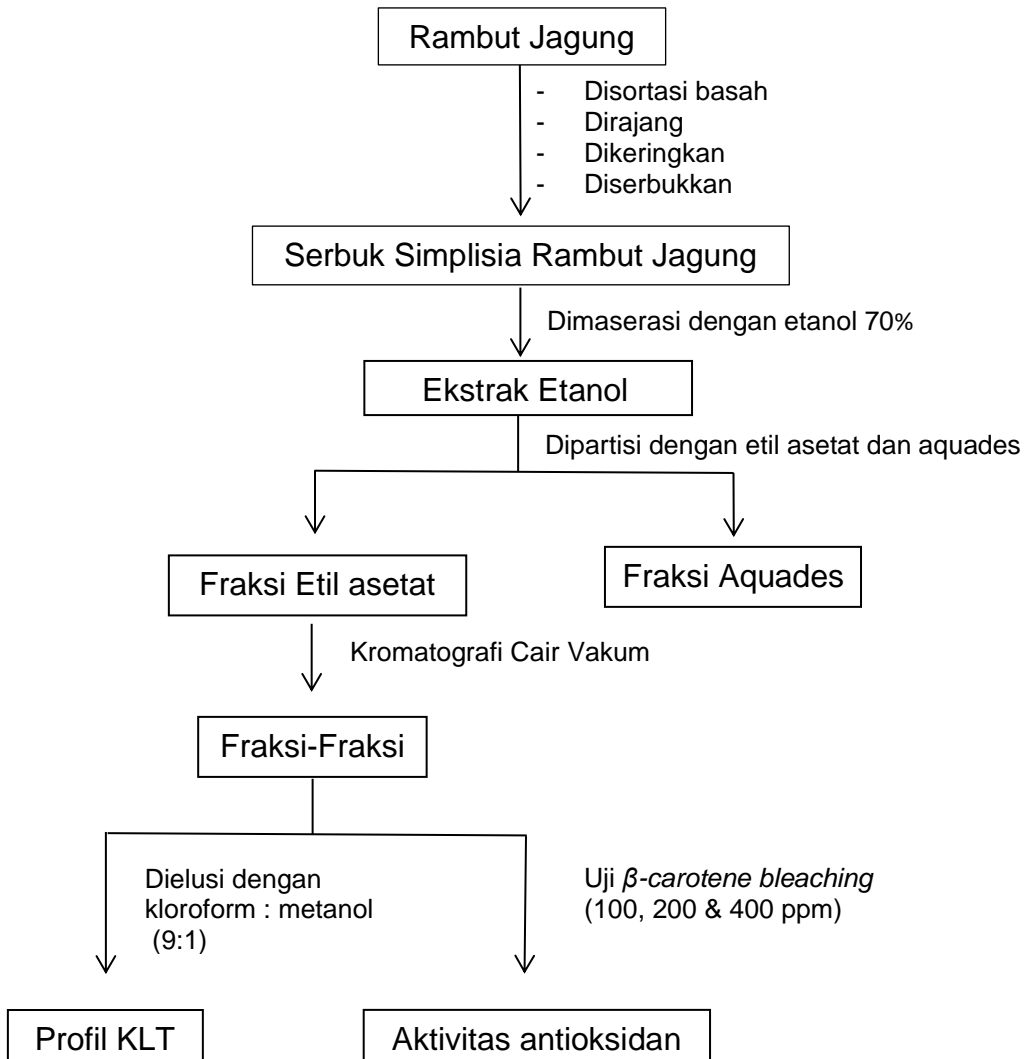
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## LAMPIRAN

### Lampiran 1. Skema kerja fraksinasi & uji aktivitas antioksidan rambut jagung



## Lampiran 2. Perhitungan rendemen & IC<sub>50</sub>

### - rendemen hasil ekstraksi

$$\% \text{ Rendemen} = \frac{\text{bobot ekstrak}}{\text{bobot simplisia}} \times 100\%$$

$$\begin{aligned} \% \text{ Rendemen} &= \frac{4,74 \text{ g}}{150 \text{ g}} \times 100\% \\ &= 3,164\% \end{aligned}$$

### - rendemen hasil partisi

$$\% \text{ Rendemen} = \frac{\text{bobot ekstrak larut Etil asetat}}{\text{bobot ekstrak}} \times 100\%$$

$$\begin{aligned} \% \text{ fraksi etil asetat} &= \frac{1,762 \text{ g}}{5 \text{ g}} \times 100\% \\ &= 35,24\% \end{aligned}$$

### - rendemen hasil fraksinasi

$$\% \text{ Rendemen} = \frac{\text{bobot fraksi}}{\text{bobot ekstrak larut Etil asetat}} \times 100\%$$

$$\text{a. Fraksi A} = \frac{258 \text{ mg}}{1000 \text{ mg}} \times 100\% = 25,8\%$$

$$\text{b. Fraksi B} = \frac{690 \text{ mg}}{1000 \text{ mg}} \times 100\% = 69\%$$

$$\text{c. Fraksi C} = \frac{40 \text{ mg}}{1000 \text{ mg}} \times 100\% = 4\%$$

$$\text{d. Fraksi D} = \frac{40 \text{ mg}}{1000 \text{ mg}} \times 100\% = 4\%$$

- **Perhitungan IC<sub>50</sub>**

**EKSTRAK**

a. Perhitungan laju degradasi

$$\text{Laju degradasi (LD)} = \ln (A/B) \times 1/t$$

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$
- Konsentrasi 100 ppm  $= \ln \left( \frac{0,926}{0,508} \right) \times \frac{1}{120} = 0,0050$
- Konsentrasi 200 ppm  $= \ln \left( \frac{0,922}{0,616} \right) \times \frac{1}{120} = 0,0034$
- Konsentrasi 400 ppm  $= \ln \left( \frac{0,899}{0,729} \right) \times \frac{1}{120} = 0,0017$

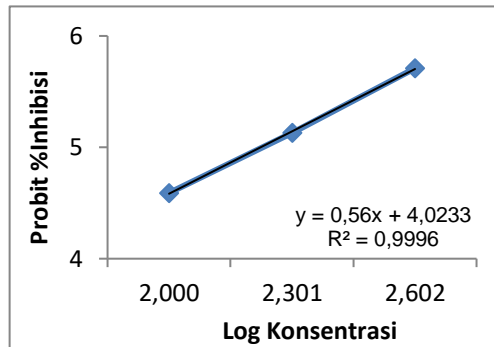
b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100$$

- Konsentrasi 100 ppm  $= \frac{0,0076 - 0,0050}{0,0076} \times 100 = 34,226\%$
- Konsentrasi 200 ppm  $= \frac{0,0076 - 0,0034}{0,0076} \times 100 = 55,737\%$
- Konsentrasi 400 ppm  $= \frac{0,0076 - 0,0017}{0,0076} \times 100 = 76,985\%$

**Tabel 4. Hasil perhitungan persentase penghambatan ekstrak**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
100 ppm	2,000	34,226	4,59
200 ppm	2,301	55,737	5,13
400 ppm	2,602	76,985	5,71



Garmbar 9. Diagram nilai probit persentase penghambatan per konsentrasi ekstrak

Persamaan regresi linear :  $y = 0,56x + 4,0233$

$y$  = Nilai probit 50

Nilai probit 50 = 5,  $y = 5$

$5 = 0,56x + 4,0233$

$x = (5 - 4,0233) / 0,56 = 1,7441$

$IC_{50} = \text{antilog } x$

$IC_{50} (\text{antilog } 1,7441) = 55,48$

## FRAKSI A

a. Perhitungan laju degradasi

**Laju degradasi (LD) =  $\ln (A/B) \times 1/t$**

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$
- Konsentrasi 100 ppm  $= \ln \left( \frac{0,941}{0,429} \right) \times \frac{1}{120} = 0,0065$



- Konsentrasi 200 ppm =  $\ln \left( \frac{0,896}{0,418} \right) \times \frac{1}{120} = 0,0063$
- Konsentrasi 400 ppm =  $\ln \left( \frac{0,903}{0,459} \right) \times \frac{1}{120} = 0,0056$

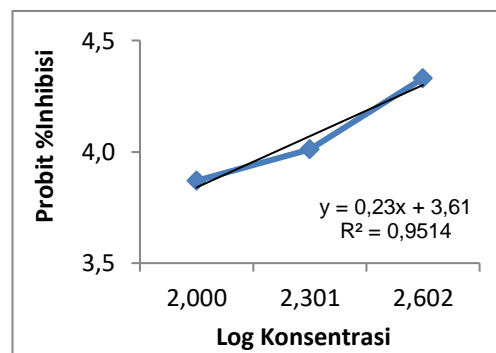
b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100\%$$

- Konsentrasi 100 ppm =  $\frac{0,0076 - 0,0065}{0,0076} \times 100 = 13,907\%$
- Konsentrasi 200 ppm =  $\frac{0,0076 - 0,0063}{0,0076} \times 100 = 16,477\%$
- Konsentrasi 400 ppm =  $\frac{0,0076 - 0,0056}{0,0076} \times 100 = 25,754\%$

**Tabel 5. Hasil persentase penghambatan fraksi A**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
100	2,000	13,907	3,87
200	2,301	16,477	4,01
400	2,602	25,754	4,33



**Garmbar 10. Diagram nilai probit persentase penghambatan per konsentrasi fraksi A**

Persamaan regresi linear :  $y = 0,23x + 3,61$

$y$  = Nilai probit 50

Nilai probit 50 = 5,  $y = 5$

$5 = 0,23x + 3,61$

$x = (5 - 3,61) / 0,23 = 6,04348$

IC<sub>50</sub> = antilog x

IC<sub>50</sub> (antilog 6,04348) = 1105295

## FRAKSI B

a. Perhitungan laju degradasi

$$\text{Laju degradasi (LD)} = \ln (A/B) \times 1/t$$

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$
- Konsentrasi 100 ppm  $= \ln \left( \frac{0,942}{0,500} \right) \times \frac{1}{120} = 0,0053$
- Konsentrasi 200 ppm  $= \ln \left( \frac{0,927}{0,586} \right) \times \frac{1}{120} = 0,0038$
- Konsentrasi 400 ppm  $= \ln \left( \frac{0,907}{0,714} \right) \times \frac{1}{120} = 0,0020$

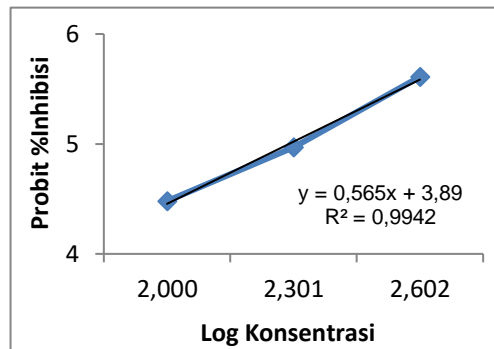
b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100\%$$

- Konsentrasi 100 ppm  $= \frac{0,0076 - 0,0053}{0,0076} \times 100 = 30,688\%$
- Konsentrasi 200 ppm  $= \frac{0,0076 - 0,0038}{0,0076} \times 100 = 49,833\%$
- Konsentrasi 400 ppm  $= \frac{0,0076 - 0,0020}{0,0076} \times 100 = 73,816\%$

**Tabel 6. Hasil perhitungan persentase penghambatan fraksi B**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
100	2,000	30,688	4,48
200	2,301	49,833	4,97
400	2,602	73,816	5,61



Gambar 11. Diagram nilai probit persentase penghambatan per konsentrasi fraksi B

Persamaan regresi linear :  $y = 0,565x + 3,89$

$y$  = Nilai probit 50

Nilai probit 50 = 5,  $y = 5$

$5 = 0,565x + 3,89$

$x = (5 - 3,89) / 0,565 = 1,9646$

$IC_{50} = \text{antilog } x$

$IC_{50} (\text{antilog } 1,9646) = 92,17$

## FRAKSI C

a. Perhitungan laju degradasi

**Laju degradasi (LD) =  $\ln (A/B) \times 1/t$**

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$

- Konsentrasi 100 ppm  $= \ln \left( \frac{0,946}{0,456} \right) \times \frac{1}{120} = 0,0061$

- Konsentrasi 200 ppm  $= \ln \left( \frac{0,943}{0,491} \right) \times \frac{1}{120} = 0,0054$

$$- \text{Konsentrasi 400 ppm} = \ln \left( \frac{0,916}{0,589} \right) \times \frac{1}{120} = 0,0037$$

b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100\%$$

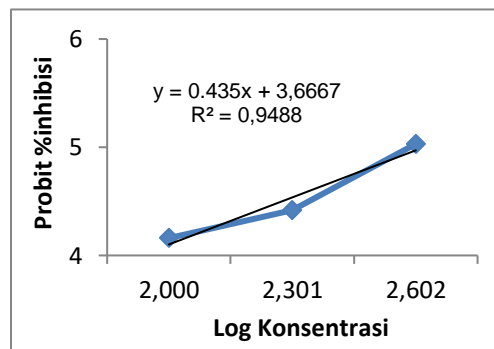
$$- \text{Konsentrasi 100 ppm} = \frac{0,0076 - 0,0061}{0,0076} \times 100 = 20,096\%$$

$$- \text{Konsentrasi 200 ppm} = \frac{0,0076 - 0,0054}{0,0076} \times 100 = 28,505\%$$

$$- \text{Konsentrasi 400 ppm} = \frac{0,0076 - 0,0037}{0,0076} \times 100 = 51,497\%$$

**Tabel 7. Hasil perhitungan persentase penghambatan fraksi C**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
100	2,000	20,096	4,16
200	2,301	28,505	4,42
400	2,602	51,497	5,03



**Garmbar 12. Diagram nilai probit persentase penghambatan per konsentrasi fraksi C**

$$y = 0,435x + 3,6667$$

$$\text{Nilai probit 50} = 5, y = 5$$

$$5 = 0,435x + 3,6667$$

$$x = (50 - 3,6667) / 0,435 = 3,5862$$

$$\text{IC}_{50} = \text{antilog } x$$

$$\text{IC}_{50} (\text{antilog } 3,5862) = 3856$$

## FRAKSI D

a. Perhitungan laju degradasi

$$\text{Laju degradasi (LD)} = \ln (A/B) \times 1/t$$

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$
- Konsentrasi 100 ppm  $= \ln \left( \frac{0,940}{0,421} \right) \times \frac{1}{120} = 0,0067$
- Konsentrasi 200 ppm  $= \ln \left( \frac{0,933}{0,486} \right) \times \frac{1}{120} = 0,0054$
- Konsentrasi 400 ppm  $= \ln \left( \frac{0,918}{0,525} \right) \times \frac{1}{120} = 0,0047$

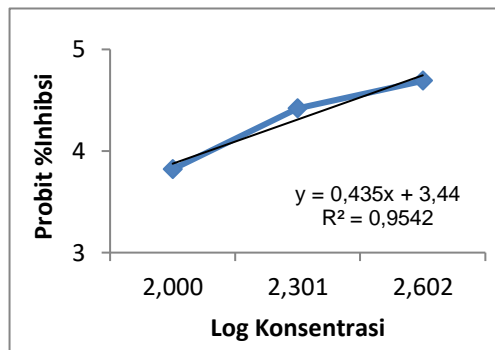
b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100\%$$

- Konsentrasi 100 ppm  $= \frac{0,0076 - 0,0067}{0,0076} \times 100 = 12,086\%$
- Konsentrasi 200 ppm  $= \frac{0,0076 - 0,0054}{0,0076} \times 100 = 28,401\%$
- Konsentrasi 400 ppm  $= \frac{0,0076 - 0,0047}{0,0076} \times 100 = 38,723\%$

**Tabel 8. Hasil perhitungan persentase penghambatan fraksi D**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
100	2,000	29,858	3,82
200	2,301	91,910	4,42
400	2,602	95,372	4,69



**Gambar 13. Diagram nilai probit persentase penghambatan per konsentrasi fraksi D**

$$y = 0,435x + 3,44$$

Nilai probit 50 = 5,  $y = 5$

$$5 = 0,435x + 3,44$$

$$x = (5 - 3,44) / 0,435 = 3,5862$$

$IC_{50} = \text{antilog } x$

$$IC_{50} (\text{antilog } 3,5862) = 8128$$

### **BAKU PEMBANDING (BHT)**

a. Perhitungan laju degradasi

$$\text{Laju degradasi (LD)} = \ln (A/B) \times 1/t$$

Keterangan :

A = absorbansi menit ke-0 inkubasi

B = absorbansi menit ke-120 inkubasi

t = lama waktu inkubasi (120 menit)

- Blanko  $= \ln \left( \frac{0,925}{0,373} \right) \times \frac{1}{120} = 0,0076$
- Konsentrasi 5 ppm  $= \ln \left( \frac{0,946}{0,642} \right) \times \frac{1}{120} = 0,0032$
- Konsentrasi 10 ppm  $= \ln \left( \frac{0,949}{0,763} \right) \times \frac{1}{120} = 0,0021$

- Konsentrasi 20 ppm =  $\ln \left( \frac{0,943}{0,844} \right) \times \frac{1}{120} = 0,0009$
- Konsentrasi 40 ppm =  $\ln \left( \frac{0,916}{0,866} \right) \times \frac{1}{120} = 0,0005$

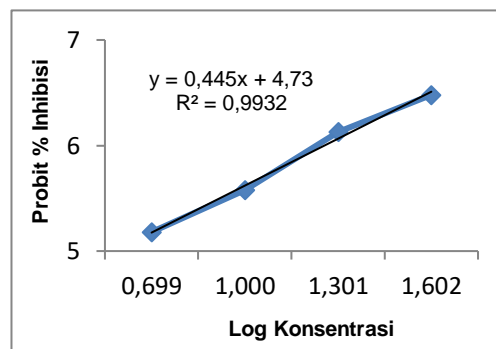
b. Perhitungan persentase penghambatan

$$\text{Persentase penghambatan} = \frac{\text{laju degradasi blanko} - \text{laju degradasi sampel}}{\text{laju degradasi blanko}} \times 100\%$$

- Konsentrasi 5 ppm =  $\frac{0,0076 - 0,0032}{0,0076} \times 100 = 57,550\%$
- Konsentrasi 10 ppm =  $\frac{0,0076 - 0,0021}{0,0076} \times 100 = 72,229\%$
- Konsentrasi 20 ppm =  $\frac{0,0076 - 0,0009}{0,0076} \times 100 = 87,843\%$
- Konsentrasi 40 ppm =  $\frac{0,0076 - 0,0005}{0,0076} \times 100 = 93,888\%$

**Tabel 9. Hasil perhitungan persentase penghambatan BHT**

Konsentrasi	Log konsentrasi	Persentase penghambatan	Probit persentase penghambatan
5	0,699	57,550	5,18
10	1,000	72,229	5,58
20	1,301	87,843	6,13
40	1,602	93,888	6,48



**Garmbar 14. Diagram nilai probit persentase penghambatan per konsentrasi BHT**

Persamaan regresi linear,  $y = 0,445x + 4,73$

Nilai probit 50 = 5,  $y = 5$

$$5 = 0,445x + 4,73$$

$$x = (50 - 4,73) / 0,445 = 0,6067$$

$IC_{50} = \text{antilog } x$

$$IC_{50} (\text{antilog } 0,6067) = 4,043$$

**Lampiran 3. Gambar**



**Gambar 15. Ekstraksi sampel**



**Gambar 16. Penguapan pelarut**



**Gambar 17. Ekstrak**



**Gambar 18. Partisi**

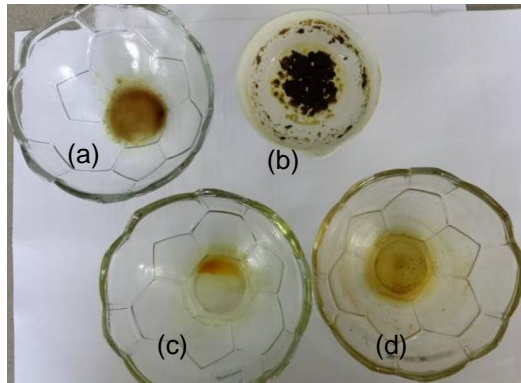


**Gambar 19. Ekstrak larut etil asetat**



**Gambar 20. Fraksnasi**





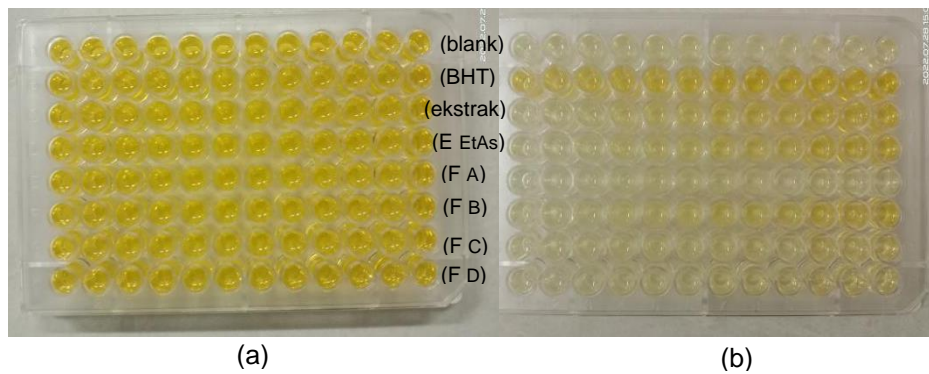
Gambar 21. Hasil fraksinasi (a) fraksi A, (b) fraksi B, (c) fraksi C, (d) fraksi D



Gambar 22. Emulasi  $\beta$ -carotene



Gambar 23. Larutan stok fraksi-fraksi



Gambar 24. (a) sebelum inkubasi, (b) setelah inkubasi 120 menit pada suhu 50 °C