

**Perhitungan Anava Acak Sempurna Untuk Penentuan Adanya Perbedaan Daya Antibakteri Antara Ekstrak n-
Heksana, Etil Asetat dan Etanol 96% Kulit Batang Pulosari Terhadap *Escherichia coli* ATCC 25922**

| REPLIKASI | PERLAKUAN | | | | | | | | | | JUMLAH |
|-----------------------------|-----------|----------|----------|-----------|-----------|-----------|-----------|----------|----------|----------|---------|
| | H 10% | H 20% | H 30% | EA 10% | EA 20% | EA 30% | Et 10% | Et 20% | Et 30% | K | |
| 1 | 0 | 0 | 0 | 12.9 | 15.85 | 16.9 | 15.9 | 16.15 | 17.1 | 28.1 | |
| 2 | 0 | 0 | 0 | 12.8 | 15.55 | 17.1 | 15.6 | 16.65 | 17.3 | 30.2 | |
| 3 | 0 | 0 | 0 | 13.1 | 15.6 | 16.7 | 15.55 | 16.35 | 16.8 | 29.1 | |
| N | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 30 |
| RATA-RATA | 0 | 0 | 0 | 12.9333 | 15.667 | 16.9 | 15.683333 | 16.38333 | 17.06667 | 29.13333 | - |
| J _i | 0 | 0 | 0 | 38.8 | 47 | 50.7 | 47.05 | 49.15 | 51.2 | 87.4 | 371,3 |
| J _i ² | 0 | 0 | 0 | 1505.44 | 2209 | 2570.49 | 2213.7025 | 2415.723 | 2621.44 | 7638.76 | 21174,6 |

Perhitungan JK:

$$k = 10$$

$$n = 3$$

$$N = 30$$

$$\sum Y_{ij}^2 = 7060.895$$

$$J = \sum J_i = 371,3$$

$$JK \text{ TOTAL} = \sum Y_{ij}^2 - \frac{J^2}{N} = 2465.44$$

$$JK. Py = \frac{\sum J_i^2}{n} - \frac{J^2}{N} = 2462.73$$

$$JK.Ey = TOTAL - Py = 2,71$$

Lampiran 12

Hasil Perhitungan HSD 5% Untuk Menentukan Perbedaan Daya Antibakteri Pada Berbagai Konsentrasi (10%, 20% dan 30%) Ekstrak n-Heksana, Etil Asetat dan Etanol 96% dengan Kontrol Positif Amoksisilin trihidrat Terhadap *Escherichia coli* ATCC 25922

UJI TUCKEY (HSD)

| Per. | | H 10% | H 20% | H 30% | EA 10% | EA 20% | EA 30% | Et 10% | Et 20% | Et 30% | K(+) | | | | | | | | | |
|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|------|-------|------|-------|------|-------|-------|-------|---|
| | MEAN | 0 | 0 | 0 | 12.93 | 15.67 | 16.9 | 15.68 | 16.38 | 17.07 | 29.13 | | | | | | | | | |
| H10% | 0 | 0 | 0 | ts | 0 | ts | 12.93 | * | 15.67 | * | 16.9 | * | 15.68 | * | 16.38 | * | 17.07 | * | 29.13 | * |
| H20% | 0 | | 0 | | 0 | ts | 12.93 | * | 15.67 | * | 16.9 | * | 15.68 | * | 16.38 | * | 17.07 | * | 29.13 | * |
| H30% | 0 | | | | 0 | | 12.93 | * | 15.67 | * | 16.9 | * | 15.68 | * | 16.38 | * | 17.07 | * | 29.13 | * |
| EA10% | 12.93 | | | | 0 | | | 2.73 | * | 3.97 | * | 2.75 | * | 3.45 | * | 4.13 | * | 16.2 | * | |
| EA20% | 15.67 | | | | | | | 0 | | 1.23 | * | 0.02 | ts | 0.72 | ts | 1.4 | * | 13.47 | * | |
| EA30% | 16.9 | | | | | | | | | 0 | | 1.22 | * | 0.52 | ts | 0.17 | ts | 12.23 | * | |
| Et10% | 15.68 | | | | | | | | | | | 0 | | 0.7 | ts | 1.38 | * | 13.45 | * | |
| Et20% | 16.38 | | | | | | | | | | | | | 0 | | 0.68 | ts | 12.75 | * | |
| Et30% | 17.07 | | | | | | | | | | | | | | | 0 | | 12.07 | * | |
| K(+) | 29.13 | | | | | | | | | | | | | | | | | 0 | | |

$$RJK = 0.136$$

$$q_{(5\%/2; p; db)} = 5.01$$

$$n = 3$$

$$db = 20$$

$$HSD(5\%) = q \sqrt{\frac{RJK}{n}} = 1.065$$

Keterangan

- * : Perbedaannya signifikan, karena selisih rata-rata > HSD (0.05)
- ts : Perbedaannya tidak signifikan, karena selisih rata-rata < HSD (0.05)

Lampiran 13

Perhitungan Anava Acak Sempurna Untuk Penentuan Adanya Perbedaan Daya Antibakteri Antara Ekstrak n-Heksana, Etil Asetat dan Etanol 96% Kulit Batang Pulosari Terhadap *Salmonella typhimurium*

PERHITUNGAN ANAVA

| REPLIKASI | PER L A K U A N | | | | | | | | | | Jumlah |
|-----------------|-----------------|-------|-------|---------|----------|--------|----------|---------|--------|---------|---------|
| | H 10% | H 20% | H 30% | EA 10% | EA 20% | EA 30% | Et 10% | Et 20% | Et 30% | K | |
| 1 | 0 | 0 | 0 | 11.35 | 11.95 | 13.1 | 11.9 | 13.05 | 14.2 | 21.1 | |
| 2 | 0 | 0 | 0 | 10.8 | 12.15 | 12.85 | 11.75 | 12.85 | 13.75 | 25.4 | |
| 3 | 0 | 0 | 0 | 10.65 | 11.65 | 12.55 | 11.8 | 12.7 | 13.9 | 23.2 | |
| N | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 30 |
| RATA-RATA | 0 | 0 | 0 | 10.9333 | 11.91667 | 12.833 | 11.81667 | 12.8667 | 13.95 | 23.2333 | - |
| Ji | 0 | 0 | 0 | 32.8 | 35.75 | 38.5 | 35.45 | 38.6 | 41.85 | 69.7 | 292,65 |
| Ji ² | 0 | 0 | 0 | 1075.84 | 1278.063 | 1482.3 | 1256.703 | 1489.96 | 1751.4 | 4858.09 | 13192,3 |

Perhitungan JK:

K = 10

n = 3

N = 30

$$\sum Y_{ij}^2 = 4407.4175$$

$$JK\ TOTAL = \sum Y_{ij}^2 - \frac{J^2}{N} = 1552.6168$$

$$JK.Py = \frac{\sum J_i^2}{n} - \frac{J^2}{N} = 1542.6418$$

$$JK.Ev = TOTAL - Pv = 9.975$$

Lampiran 14

Hasil Perhitungan HSD 5% Untuk Menentukan Perbedaan Daya Antibakteri Pada Berbagai Konsentrasi (10%, 20% dan 30%) Ekstrak n-Heksana, Etil Asetat dan Etanol 96% dengan Kontrol Positif Amoksisilin trihidrat Terhadap *Salmonella typhimurium*

UJI TUCKEY (HSD)

| Per. | | H 10% | H 20% | H 30% | EA 10% | EA 20% | EA 30% | Et 10% | Et 20% | Et 30% | K(+) | | | | | | | | | |
|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|----|-------|----|-------|----|-------|---|-------|---|
| | MEAN | 0 | 0 | 0 | 10.93 | 11.92 | 12.83 | 11.82 | 12.87 | 13.95 | 23.23 | | | | | | | | | |
| H10% | 0 | 0 | 0 | ts | 0 | ts | 10.93 | * | 11.92 | * | 12.83 | * | 11.82 | * | 12.87 | * | 13.95 | * | 23.23 | * |
| H20% | 0 | | 0 | | 0 | ts | 10.93 | * | 11.92 | * | 12.83 | * | 11.82 | * | 12.87 | * | 13.95 | * | 23.23 | * |
| H30% | 0 | | | | 0 | | 10.93 | * | 11.92 | * | 12.83 | * | 11.82 | * | 12.87 | * | 13.95 | * | 23.23 | * |
| EA10% | 10.93 | | | | 0 | | 0.983 | ts | 1.9 | ts | 0.88 | ts | 1.93 | ts | 3.02 | * | 12.3 | * | | |
| EA20% | 11.92 | | | | | | 0 | | 0.92 | ts | 0.1 | ts | 0.95 | ts | 2.03 | ts | 11.32 | * | | |
| EA30% | 12.83 | | | | | | | | 0 | | 1.017 | ts | 0.03 | ts | 1.12 | ts | 10.4 | * | | |
| Et10% | 11.82 | | | | | | | | 0 | | | | 1.05 | ts | 2.13 | * | 11.42 | * | | |
| Et20% | 12.87 | | | | | | | | | | | | 0 | | 1.08 | ts | 10.37 | * | | |
| Et30% | 13.95 | | | | | | | | | | | | | | 0 | | 9.28 | * | | |
| K(+) | 23.23 | | | | | | | | | | | | | | | | 0 | | | |

$$RJK = 0.499 \quad q_{(5\%/2; p; db)} = 5.01$$

$$n = 3$$

$$HSD(5\%) = q \sqrt{\frac{RJK}{n}}$$

$$db = 20$$

$$= 2.043$$

Keterangan

* : Perbedaannya signifikan, karena selisih rata-rata > HSD (0.05)

ts : Perbedaannya tidak signifikan, karena selisih rata-rata < HSD (0.05)

Tabel 4.3. Harga Rf Hasil KLT Tanin Secara Visibel, UV 254 nm dan UV 366 nm

| Ekstrak n-heksan | | | Ekstrak Etil Asetat | | | Ekstrak Etanol | | | Pembanding Jambu biji | | |
|--|------------------|----------------|---------------------|--------|------------------------|----------------|--------|----------------|------------------------|------------------|------------------------|
| Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 |
| 0,46 (hijau kuning) | 0,68 (coklat) | - | - | - | - | - | - | - | 0,43 (hijau kuning) | 0,43 (coklat) | - |
| 0,35 (hijau kuning) | 0,49 (coklat) | - | - | - | - | - | - | - | 0,29 (hijau kuning) | 0,29 (coklat) | - |
| - | 0,35 (coklat) | - | - | - | - | - | - | - | - | - | - |
| - | 0,20 (coklat) | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | 0,09 (hijau) | - | - |
| Dengan penampak noda FeCl ₃ 10% (UV 366 nm) | | | | | | | | | | | |
| - | - | 0,90 (biru) | - | - | 0,60 (biru) | - | - | 0,60 (biru) | - | - | 0,59 (biru) |
| - | - | 0,68 (biru) | - | - | 0,44 (merah jingga) | - | - | - | - | - | 0,43 (merah jingga) |
| - | - | 0,49 | - | - | 0,31 | - | - | - | - | - | 0,29 |

| | | | | | | | | | | | |
|---|---|---|-----------------|---|---------------------------|---|---|---------------------------|---|---|----------------|
| - | - | - | - | - | - | - | - | - | - | - | (biru) |
| - | - | - | - | - | - | - | - | - | - | - | 0,35 (biru) |
| - | - | - | 0,05 (hijau) | - | 0,05 (merah jingga) | - | - | 0,05 (merah jingga) | - | - | 0,19 (biru) |

Konsentrasi penotolan masing-masing ekstrak adalah 2,5% dan volume penotolannya 2 µl. Noda yang mewakili alkaloid terdapat pada ekstrak n-heksan, etil asetat dan etanol dengan harga Rf = 0,73 (biru) dan merica hitam (pembanding) dengan harga Rf = 0,73 (biru) dengan penampak noda Dragendorff (UV 366 nm).

Tabel 4.4. Harga Rf Hasil KLT Minyak Atsiri Secara Visibel, UV 254 nm dan UV 366 nm

| Ekstrak n-heksan | | | Ekstrak Etil Asetat | | | Ekstrak Etanol | | | Pembanding Kapulaga | | |
|---|------------------|-------------------------|--------------------------|------------------|---------------------------|--------------------------|------------------|-------------------------|--------------------------|------------------|-------------------------|
| Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 | Visibel | UV 254 | UV 366 |
| - | 0,89 (coklat) | - | - | - | - | - | 0,76 (coklat) | - | - | 0,89 (coklat) | - |
| - | 0,76 (coklat) | - | - | 0,76 (coklat) | - | - | - | - | - | 0,76 (coklat) | - |
| - | - | - | - | 0,69 (coklat) | - | - | - | - | - | - | - |
| - | - | - | - | 0,54 (coklat) | - | - | - | - | - | - | - |
| Dengan penampak noda anisaldehyda-asam sulfat (UV 366 nm) | | | | | | | | | | | |
| - | - | 0,89 (biru hijau) | - | - | 0,89 (biru hijau) | - | - | 0,89 (biru hijau) | - | - | 0,89 (biru hijau) |
| 0,76 (coklat muda) | - | 0,76 (biru hijau) | 0,76 (coklat muda) | - | 0,76 (biru hijau) | 0,76 (coklat muda) | - | 0,76 (biru hijau) | 0,76 (coklat muda) | - | 0,76 (biru hijau) |
| - | - | - | - | - | 0,69 (biru hijau) | - | - | - | - | - | - |
| - | - | - | - | - | 0,54 (merah jingga) | - | - | - | - | - | - |

| | | | | | | | | | | | |
|---|---|---|-----------------|---|---------------------------|---|---|---|---|---|---|
| - | - | - | 0,10 (hijau) | - | 0,10 (merah jingga) | - | - | - | - | - | - |
|---|---|---|-----------------|---|---------------------------|---|---|---|---|---|---|

Konsentrasi penotolan masing-masing ekstrak adalah 2,5% dan volume penotolannya 2 μ l. Noda yang mewakili minyak atsiri terdapat pada ekstrak n-heksan, etil asetat dan etanol dengan harga Rf = 0,76 (biru hijau) dan kapulaga (pembanding) dengan harga Rf = 0,76 (biru hijau) dengan penampak noda anisaldehyda-asam sulfat (UV 366 nm).

