# LAMPIRAN I

# HASIL DETERMINASI

**HERBARIUM JATINANGOR**
**LABORATORIUM TAKSONOMI TUMBUHAN**
**JURUSAN BIOLOGI FMIPA UNPAD**
Gedung D2-212, Jl. Raya Bandung Sumedang Km 21 Jatinangor
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**LEMBAR IDENTIFIKASI TUMBUHAN**
No.45/HB/01/2021

Herbarium Jatinangor, Laboratorium Taksonomi Tumbuhan, Jurusan Biologi FMIPA UNPAD, dengan ini menerangkan bahwa:

| | |
|---|---|
| Nama | : Rizka Akmalia |
| NPM | : 31117137 |
| Instansi | : STIKES BTH Tasikmalaya |
| Telah melakukan identifikasi tumbuhan, dengan No. Koleksi: - | |
| Tanggal Koleksi | : 20 Januari 2021. |
| Lokasi | : Tasikmalaya. |

Hasil Identifikasi,

| | |
|---|---|
| Nama Ilmiah | : ***Hylocereus costaricensis*** |
| Sinonim | : *Hylocereus polyrhizus* (F.A.C.Weber) Britton & Rose |
| Nama Lokal | : Kulit buah naga merah |
| Suku/Famili | : Cactaceae |

Klasifikasi (Hirarki Taksonomi)

| | |
|---|---|
| Kingdom | Plantae |
| Divisi | Magnoliophyta |
| Class | Magnoliopsida |
| Ordo | Caryophyllales |
| Famili | Cactaceae |
| Genus | *Hylocereus* |
| Species | *Hylocereus costaricensis* |

Referensi:


Backer, C. A. and Bakkuizen v/d Brink R. C Jr. 1963. *Flora of Java*. Wolter-Noordhoff NV. Groningen.

Cronquist, Arthur. 1981. *AnIntegrated System of Classification of Flowering Plants*. Columbia University Press. New York

The Plant List.*Website DuniaTumbuhan*.http://www.theplantlist.org/tpl1.1/record/kew-158489. Diakses tanggal, 26 Januari 2021.


Jatinangor, 26 Januari 2021.

Identifikator,

LABORATORIUM TAKSONOMI TUMBUHAN
JURUSAN BIOLOGI FMIPA-UNPAD

Drs. Joko Kusmoro, M.P.
NIP. 19600801 199101 1 001

## LAMPIRAN II

## PERHITUNGAN PARAMETER MUTU SIMPLISIA

### 1. Penetapan Kadar Air

| No | Berat Simplisia (gram) | Vol Awal (mL) | Vol Akhir (mL) |
|---|---|---|---|
| 1 | 5,0000 | 2 | 2,4 |
| 2 | 5,0000 | 2,1 | 2,5 |
| 3 | 5,0000 | 1,5 | 1,9 |

**1)** % Kadar air $= \frac{volume\ akhir - volum\ awal}{berat\ simplisia}\ x\ 100\%$

$= \frac{2.4-2}{5\ \text{gram}}\ x\ 100\%$

$= 8\ \%$

**2)** % Kadar air $= \frac{volume\ akhir - volum\ awal}{berat\ simplisia}\ x\ 100\%$

$= \frac{2.5-2,1}{5\ \text{gram}}\ x\ 100\%$

$= 8\ \%$

**3)** % Kadar air $= \frac{volume\ akhir - volum\ awal}{berat\ simplisia}\ x\ 100\%$

$= \frac{1,9-1,5}{5\ \text{gram}}\ x\ 100\%$

$= 8\ \%$

% Rata-rata kadar air $= \frac{8\%+8\%+8\%}{3}$

$= 8\%$

## 2. Peneteapan Kadar Abu Total

| No | Berat Simplisia (gram) | Berat krus kosong konstan (gram) | Berat krus + abu total (gram) |
|---|---|---|---|
| 1 | 2,0000 | 16,2937 | 16,4046 |
| 2 | 2,0000 | 16,4291 | 16,5360 |
| 3 | 2,0000 | 17,0461 | 17,1534 |

**1)** % Kadar abu total = $\frac{(berat\ krus + abu\ total) - (berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{16{,}4046 - 16{,}2937}{2\ \text{gram}}\ x\ 100\%$

= 5,54 %

**2)** % Kadar abu total = $\frac{(berat\ krus + abu\ total) - (berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{16{,}5360 - 16{,}4291}{2\ \text{gram}}\ x\ 100\%$

= 5,34 %

**3)** % Kadar abu total = $\frac{(berat\ krus + abu\ total) - (berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{17{,}1534 - 17{,}1534}{2\ \text{gram}}\ x\ 100\%$

= 5,36 %

% Rata-rata kadar abu total = $\frac{5{,}54\% + 5{,}34\% + 5{,}36\%}{3}$

= 5,41 %

### 3. Penetapan Kadar Abu Larut Air

| No | Berat Simplisia (gram) | Berat krus kosong konstan (gram) | Berat krus + abu (gram) |
|---|---|---|---|
| 1 | 2,0000 | 18,6212 | 18,6857 |
| 2 | 2,0000 | 18,7102 | 18,7726 |
| 3 | 2,0000 | 18,4254 | 18,4896 |

**1)** % Kadar abu larut air = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{18,6857-18,6212}{2\ \text{gram}}\ x\ 100\%$

= 3,22 %

**2)** % Kadar abu larut air = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{18,7726-18,7102}{2\ \text{gram}}\ x\ 100\%$

= 3,12 %

**3)** % Kadar abu larut air = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{18,4896-18,4254}{2\ \text{gram}}\ x\ 100\%$

= 3,21 %

% Rata-rata kadar abu larut air = $\frac{3,22\%+3,12\%+3,21\%}{3}$

= 3,18 %

**4. Penentuan Kadar Abu Tidak Larut Asam**

| No | Berat Simplisia (gram) | Berat krus kosong konstan (gram) | Berat krus + abu tidak larut asam (gram) |
|---|---|---|---|
| 1 | 2,0000 | 17,2731 | 17,2958 |
| 2 | 2,0000 | 17,6031 | 17,7264 |
| 3 | 2,0000 | 17,7243 | 17.7481 |

**1)** % Kadar abu tidak larut asam = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{17,2958-17,2731}{2\ \text{gram}}\ x\ 100\%$

= 1,13 %

**2)** % Kadar abu tidak larut asam = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{17,7264-17,6031}{2\ \text{gram}}\ x\ 100\%$

= 1,16 %

**3)** % Kadar abu tidak larut asam = $\frac{(berat\ krus+abu)-(berat\ krus\ kosong)}{berat\ simplisia}\ x\ 100\%$

$= \frac{17.7481-17,7243}{2\ \text{gram}}\ x\ 100\%$

= 1,19 %

% Rata-rata kadar abu total = $\frac{1,13\%+1,16\%+1,19\%}{3}$

= 1,16 %

## 5. Penetapan Kadar Sari Larut Air

| No | Berat Simplisia (gram) | B Cawan Konstan (gram) | B Cawan +Ekstrak Konstan (gram) |
|---|---|---|---|
| 1 | 5,0000 | 21,5287 | 21,7960 |
| 2 | 5,0000 | 17,9407 | 18,2065 |
| 3 | 5,0000 | 23,0424 | 23,3202 |

1) % Kadar sari lar air = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{21,7960-21,5287}{5\ \text{gram}}\ x\ \frac{100}{20}\ x\ 100\%$

= 26,73 %

2) % Kadar sari lar air = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{18,2065-17,9407}{5\ \text{gram}}\ x\ 100\%$

= 26,58 %

3) % Kadar sari lar air = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{23,3202-23,0424}{5\ \text{gram}}\ x\ 100\%$

= 27,78 %

% Rata-rata kadar sari lar air = $\frac{26,73\%+26,58\%+27,78\%}{3}$

= 27,03%

## 6. Penetapan Kadar Sari Larut Etanol

| No | Berat Simplisia (gram) | B Cawan Konstan (gram) | B Cawan +Ekstrak Konstan (gram) |
|---|---|---|---|
| 1 | 5,0000 | 34,3206 | 34,4756 |
| 2 | 5,0000 | 33,3214 | 33,4872 |
| 3 | 5,0000 | 35,3306 | 35,4956 |

1) % Kadar sari lar etanol = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{34,4756-34,3206}{5\ \text{gram}}\ x\ \frac{100}{20}\ x\ 100\%$

= 15,5 %

2) % Kadar sari lar etanol = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{33,4872-33,3214}{5\ \text{gram}}\ x\ \frac{100}{20}\ x\ 100\%$

= 16,58 %

3) % Kadar sari lar etanol = $\frac{cawan\ uap+ekstrak-cawan\ kosong}{berat\ simplisia}\ x\ \frac{100}{20}\ x\ 100\%$

$= \frac{35,4956-35,3306}{5\ \text{gram}}\ x\ \frac{100}{20}\ x\ 100\%$

= 16,5 %

% Rata-rata kadar sari lar etanol = $\frac{15,5\%+16,58\%+16,5\%}{3}$

= 16,19 %

**7. Penetapan Susut Pengeringan**

| No | Berat Simplisia (gram) | Berat Botol timbang kosong (gram) | Berat botol timbang + Simplisia (gram) |
|---|---|---|---|
| 1 | 2,0028 | 38,6060 | 40,4123 |
| 2 | 2,0027 | 47,1787 | 48,9862 |
| 3 | 2,0028 | 38,6115 | 40,4169 |

- Berat akhir
  a. 40,4123-38,6060 = 1,8063
  b. 48,9862-47,1787 = 1,8075
  c. 40,4169-38,6115 = 1,8054

1) % Susut pengeringan = $\frac{berat\ sampel - berat\ akhir}{berat\ sampel}\ x\ 100\%$

$= \frac{2{,}0028 - 1{,}8063}{2{,}0028\ \text{gram}}\ x\ 100\%$

= 9,84 %

2) % Susut pengeringan =$\frac{berat\ sampel - berat\ akhir}{berat\ sampel}\ x\ 100\%$

$= \frac{2{,}0027 - 1{,}8075}{2{,}0027\ \text{gram}}\ x\ 100\%$

= 9,74 %

3) % Susut pengeringan = $\frac{berat\ sampel - berat\ akhir}{berat\ sampel}\ x\ 100\%$

$= \frac{2{,}0028 - 1{,}8054}{2{,}0028\ \text{gram}}\ x\ 100\%$

= 9,85 %

% Rata-rata kadar susut pengeringan = $\frac{9{,}84 + 9{,}74\% + 9{,}85\%}{3}$

= 9,81%

**LAMPIRAN III**

**PERHITUNGAN PENENTUAN KADAR ANTOSIANIN**

| pH | Sampel | Absorbansi 510 nm | Absorbansi 700 nm | Rata-rata Abs 510 nm | Rata-rata Abs 700 nm | Rata-rata Antosianin |
|---|---|---|---|---|---|---|
| 1,0 (buffer KCL) | Tanpa Kopigmen | 0,372 | 0,129 | 0,372 | 0,136 | 16,865 |
| | | 0,371 | 0,140 | | | |
| | | 0,374 | 0,141 | | | |
| | (+) kopigmen 1% | 0,449 | 0,157 | 0,447 | 0,159 | 22,376 |
| | | 0,447 | 0,163 | | | |
| | | 0,446 | 0,163 | | | |
| | (+) kopigmen 1,1% | 0,457 | 0,156 | 0,456 | 0,156 | 34,733 |
| | | 0,456 | 0,157 | | | |
| | | 0,455 | 0,56 | | | |
| | (+) kopigmen 1,2% | 0,446 | 0,112 | 0,445 | 0,111 | 36,069 |
| | | 0,446 | 0,110 | | | |
| | | 0,444 | 0,112 | | | |
| 4,5 (buffer Na Sirtarat) | Tanpa Kopigmen | 0,371 | 0,198 | 0,331 | 0,196 | |
| | | 0,312 | 0,196 | | | |
| | | 0,312 | 0,196 | | | |
| | (+) kopigmen 1% | 0,370 | 0,176 | 0,331 | 0,177 | |
| | | 0,312 | 0,175 | | | |
| | | 0,312 | 0,182 | | | |
| | (+) kopigmen 1,1% | 0,242 | 0,152 | 0,243 | 0,151 | |
| | | 0,246 | 0,150 | | | |
| | | 0,242 | 0,153 | | | |
| | (+) kopigmen 1,2% | 0,292 | 0,193 | 0,308 | 0,190 | |
| | | 0,342 | 0,192 | | | |
| | | 0,292 | 0,186 | | | |

## LAMPIRAN IV

## HASIL ANALISIS MENGGUNAKAN SPSS 25

- **Pengolahan Data Hasil Uji Stabilitas oleh Pengaruh pH**

1. Uji Normalitas

a. Hari ke 1

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| retensi | hari ke 1 | .372 | 3 | . | .781 | 3 | .070 |
| | hari ke 5 | .356 | 3 | . | .816 | 3 | .154 |
| | hari ke 10 | .267 | 3 | . | .951 | 3 | .576 |
| | hari ke 15 | .258 | 3 | . | .960 | 3 | .614 |
| | hari ke 20 | .234 | 3 | . | .979 | 3 | .720 |
| | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

Nilai siginifikan >0,05 menunjukan data berdistribusi normal

b. Hari ke 5

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| retensi | hari ke 5 | .356 | 3 | . | .816 | 3 | .154 |
| | hari ke 10 | .267 | 3 | . | .951 | 3 | .576 |
| | hari ke 15 | .258 | 3 | . | .960 | 3 | .614 |
| | hari ke 20 | .234 | 3 | . | .979 | 3 | .720 |
| | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

Nilai siginifikan >0,05 menunjukan data berdistribusi normal

c. Hari ke 10

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| retensi | hari ke 10 | .267 | 3 | . | .951 | 3 | .576 |
| | hari ke 15 | .258 | 3 | . | .960 | 3 | .614 |
| | hari ke 20 | .234 | 3 | . | .979 | 3 | .720 |
| | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

Nilai siginifikan >0,05 menunjukan data berdistribusi normal

d. Hari ke 15

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Retensi | hari ke 15 | .188 | 3 | . | .998 | 3 | .911 |
| | hari ke 20 | .234 | 3 | . | .979 | 3 | .720 |
| | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

Nilai siginifikan >0,05 menunjukan data berdistribusi normal

e. Hari ke 20

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Retensi | hari ke 20 | .234 | 3 | . | .979 | 3 | .720 |
| | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

f. Hari ke 25

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | Kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Retensi | hari ke 25 | .219 | 3 | . | .987 | 3 | .780 |

a. Lilliefors Significance Correction

2. Antosianin Tidak Terkopigmentasi

a. pH 3 terkopigmentasi 1,2% hari ke 1 dan hari ke 5

**Independent Samples Test**

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 95% Confidence Interval of the Difference | |
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Equal variances assumed | .061 | .817 | -3.792 | 4 | .019 | -.80667 | .21273 | -1.39731 | -.21602 |
| Equal variances not assumed | | | -3.792 | 3.971 | .019 | -.80667 | .21273 | -1.39904 | -.21429 |

Nilai signifikan 0,817 (>0,05) data berdistribusi normal

Nilai sig (2-tailed) 0,019 (>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

b. pH 3 terkopigmentasi 1,2% hari ke 5 dan hari ke 10

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | T | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| absorbansi | Equal variances assumed | .053 | .829 | -7.053 | 4 | .002 | -1.39667 | .19802 | -1.94645 | -.84688 |
| | Equal variances not assumed | | | -7.053 | 3.988 | .002 | -1.39667 | .19802 | -1.94710 | -.84623 |

Nilai signifikan 0,829(>0,05) data berdistribusi normal

Nilai sig (2-tailed) 0,002(>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

c. pH 3 terkopigmentasi 1,2% hari ke 10 dan hari ke 15

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | T | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| absorbansi | Equal variances assumed | 2.932 | .162 | -1.750 | 4 | .155 | -.60333 | .34469 | -1.56035 | .35368 |
| | Equal variances not assumed | | | -1.750 | 2.715 | .188 | -.60333 | .34469 | -1.76844 | .56177 |

Nilai signifikan 0,162 (>0,05) data berdistribusi normal

Nilai sig (2-tailed) 0,188 (>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

d. pH 3 terkopigmentasi 1,2% hari ke 15 dan hari ke 20

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| absorbansi | Equal variances assumed | 3.252 | .146 | -3.10300 | 4 | .036 | -1.06000 | .34160 | -2.00843 | -.11157 |
| | Equal variances not assumed | | | -3.10300 | 2.638 | .063 | -1.06000 | .34160 | -2.23672 | .11672 |

Nilai signifikan 0,146 (>0,05) data berdistribusi normal

Nilai sig (2-tailed) 0,063 (>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

e. pH 3 terkopigmentasi 1,2% hari ke 20 dan hari ke 25

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| absorbansi | Equal variances assumed | .296 | .615 | -4.950 | 4 | .008 | -1.06333 | .21481 | -1.65975 | -.46692 |
| | Equal variances not assumed | | | -4.950 | 3.633 | .010 | -1.06333 | .21481 | -1.68424 | -.44243 |

Nilai signifikan 0,615 (>0,05) data berdistribusi normal

Nilai sig (2-tailed) 0,010 (>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

- Uji ANOVA untuk melihat adanya perbedaan antara antosianin terkopigmnetaasi dengan antosianin yang tidak terkopigmentasi pada pengaruh pH

a. Hari ke 1

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Retensi | Based on Mean | 4.297 | 5 | 12 | .018 |
| | Based on Median | 1.479 | 5 | 12 | .267 |
| | Based on Median and with adjusted df | 1.479 | 5 | 3.208 | .389 |
| | Based on trimmed mean | 4.038 | 5 | 12 | .022 |

Nilai signifikan (>0,05) data homogeny

**ANOVA**

retensi

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 50.730 | 5 | 10.146 | 31.510 | .000 |
| Within Groups | 3.864 | 12 | .322 | | |
| Total | 54.594 | 17 | | | |

Nilai signifikan (>0,05)tidak terdapat perbedaan yang signifikan antara perlakuan

b. Hari ke 5

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Retensi | Based on Mean | 4.449 | 4 | 10 | .025 |
| | Based on Median | 1.598 | 4 | 10 | .249 |
| | Based on Median and with adjusted df | 1.598 | 4 | 2.770 | .375 |
| | Based on trimmed mean | 4.194 | 4 | 10 | .030 |

Nilai signifikan (>0,05) data homogeny

**ANOVA**

retensi

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 30.727 | 4 | 7.682 | 20.670 | .000 |
| Within Groups | 3.716 | 10 | .372 | | |
| Total | 34.443 | 14 | | | |

Nilai signifikan (>0,05) terdapat perbedaan yang signifikan antara perlakuan

c. Hari ke 10

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| retensi | Based on Mean | 4.570 | 3 | 8 | .038 |
| | Based on Median | 1.682 | 3 | 8 | .247 |
| | Based on Median and with adjusted df | 1.682 | 3 | 2.454 | .366 |
| | Based on trimmed mean | 4.315 | 3 | 8 | .044 |

Nilai signifikan (>0,05) data homogeny

**ANOVA**

retensi

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 15.395 | 3 | 5.132 | 11.428 | .003 |
| Within Groups | 3.592 | 8 | .449 | | |
| Total | 18.987 | 11 | | | |

Nilai signifikan (>0,05) terdapat perbedaan yang signifikan antara perlakua

d. Hari ke 15

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| retensi | Based on Mean | 1.614 | 2 | 6 | .275 |
| | Based on Median | 1.334 | 2 | 6 | .332 |
| | Based on Median and with adjusted df | 1.334 | 2 | 3.141 | .381 |
| | Based on trimmed mean | 1.598 | 2 | 6 | .278 |

Nilai signifikan (>0,05) data homogeny

**ANOVA**

retensi

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 7.740 | 2 | 3.870 | 16.893 | .003 |
| Within Groups | 1.374 | 6 | .229 | | |
| Total | 9.114 | 8 | | | |

Nilai signifikan (>0,05) terdapat perbedaan yang signifikan antara perlakuan

e. Hari ke 20

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Retensi | Based on Mean | .296 | 1 | 4 | .615 |
| | Based on Median | .185 | 1 | 4 | .689 |
| | Based on Median and with adjusted df | .185 | 1 | 3.687 | .691 |
| | Based on trimmed mean | .288 | 1 | 4 | .620 |

Nilai signifikan (>0,05) data homogen

**ANOVA**

retensi

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.696 | 1 | 1.696 | 24.503 | .008 |
| Within Groups | .277 | 4 | .069 | | |
| Total | 1.973 | 5 | | | |

f. Hari ke 25

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Retensi | Based on Mean | 4.467 | 1 | 6 | .079 |
| | Based on Median | 3.485 | 1 | 6 | .111 |
| | Based on Median and with adjusted df | 3.485 | 1 | 6.000 | .111 |
| | Based on trimmed mean | 4.451 | 1 | 6 | .079 |

Nilai signifikan (>0,05) data homogeny

**ANOVA**

Retensi

| ----- | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| ween Groups | 9.505 | 1 | 9.505 | .317 | .594 |
| Within Groups | 179.827 | 6 | 29.971 | | |
| Total | 189.332 | 7 | | | |

Nilai signifikan (>0,05) terdapat perbedaan yang signifikan antara perlakuan

- **LSD**

a. Hari ke 1

**Multiple Comparisons**

Dependent Variable: retensi

LSD

| (I) kelompok | (J) kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| hari ke 1 | hari ke 5 | -.80667 | .46331 | .107 | -1.8161 | .2028 |
| | hari ke 10 | -2.20333* | .46331 | .000 | -3.2128 | -1.1939 |
| | hari ke 15 | -2.33000* | .46331 | .000 | -3.3395 | -1.3205 |
| | hari ke 20 | -3.87000* | .46331 | .000 | -4.8795 | -2.8605 |
| | hari ke 25 | -4.93333* | .46331 | .000 | -5.9428 | -3.9239 |
| hari ke 5 | hari ke 1 | .80667 | .46331 | .107 | -.2028 | 1.8161 |
| | hari ke 10 | -1.39667* | .46331 | .011 | -2.4061 | -.3872 |
| | hari ke 15 | -1.52333* | .46331 | .006 | -2.5328 | -.5139 |
| | hari ke 20 | -3.06333* | .46331 | .000 | -4.0728 | -2.0539 |
| | hari ke 25 | -4.12667* | .46331 | .000 | -5.1361 | -3.1172 |
| hari ke 10 | hari ke 1 | 2.20333* | .46331 | .000 | 1.1939 | 3.2128 |
| | hari ke 5 | 1.39667* | .46331 | .011 | .3872 | 2.4061 |
| | hari ke 15 | -.12667 | .46331 | .789 | -1.1361 | .8828 |
| | hari ke 20 | -1.66667* | .46331 | .004 | -2.6761 | -.6572 |
| | hari ke 25 | -2.73000* | .46331 | .000 | -3.7395 | -1.7205 |
| hari ke 15 | hari ke 1 | 2.33000* | .46331 | .000 | 1.3205 | 3.3395 |
| | hari ke 5 | 1.52333* | .46331 | .006 | .5139 | 2.5328 |
| | hari ke 10 | .12667 | .46331 | .789 | -.8828 | 1.1361 |
| | hari ke 20 | -1.54000* | .46331 | .006 | -2.5495 | -.5305 |
| | hari ke 25 | -2.60333* | .46331 | .000 | -3.6128 | -1.5939 |
| hari ke 20 | hari ke 1 | 3.87000* | .46331 | .000 | 2.8605 | 4.8795 |
| | hari ke 5 | 3.06333* | .46331 | .000 | 2.0539 | 4.0728 |
| | hari ke 10 | 1.66667* | .46331 | .004 | .6572 | 2.6761 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | hari ke 15 | 1.54000* | .46331 | .006 | .5305 | 2.5495 |
| | hari ke 25 | -1.06333* | .46331 | .041 | -2.0728 | -.0539 |
| hari ke 25 | hari ke 1 | 4.93333* | .46331 | .000 | 3.9239 | 5.9428 |
| | hari ke 5 | 4.12667* | .46331 | .000 | 3.1172 | 5.1361 |
| | hari ke 10 | 2.73000* | .46331 | .000 | 1.7205 | 3.7395 |
| | hari ke 15 | 2.60333* | .46331 | .000 | 1.5939 | 3.6128 |
| | hari ke 20 | 1.06333* | .46331 | .041 | .0539 | 2.0728 |

*. The mean difference is significant at the 0.05 level.

b. Hari ke 5

**Multiple Comparisons**

Dependent Variable: retensi

LSD

| | | Mean Difference | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| (I) kelompok | (J) kelompok | (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| hari ke 5 | hari ke 10 | -1.39667* | .49775 | .019 | -2.5057 | -.2876 |
| | hari ke 15 | -1.52333* | .49775 | .012 | -2.6324 | -.4143 |
| | hari ke 20 | -3.06333* | .49775 | .000 | -4.1724 | -1.9543 |
| | hari ke 25 | -4.12667* | .49775 | .000 | -5.2357 | -3.0176 |
| hari ke 10 | hari ke 5 | 1.39667* | .49775 | .019 | .2876 | 2.5057 |
| | hari ke 15 | -.12667 | .49775 | .804 | -1.2357 | .9824 |
| | hari ke 20 | -1.66667* | .49775 | .007 | -2.7757 | -.5576 |
| | hari ke 25 | -2.73000* | .49775 | .000 | -3.8391 | -1.6209 |
| hari ke 15 | hari ke 5 | 1.52333* | .49775 | .012 | .4143 | 2.6324 |
| | hari ke 10 | .12667 | .49775 | .804 | -.9824 | 1.2357 |
| | hari ke 20 | -1.54000* | .49775 | .011 | -2.6491 | -.4309 |
| | hari ke 25 | -2.60333* | .49775 | .000 | -3.7124 | -1.4943 |
| hari ke 20 | hari ke 5 | 3.06333* | .49775 | .000 | 1.9543 | 4.1724 |
| | hari ke 10 | 1.66667* | .49775 | .007 | .5576 | 2.7757 |
| | hari ke 15 | 1.54000* | .49775 | .011 | .4309 | 2.6491 |
| | hari ke 25 | -1.06333 | .49775 | .058 | -2.1724 | .0457 |
| hari ke 25 | hari ke 5 | 4.12667* | .49775 | .000 | 3.0176 | 5.2357 |
| | hari ke 10 | 2.73000* | .49775 | .000 | 1.6209 | 3.8391 |
| | hari ke 15 | 2.60333* | .49775 | .000 | 1.4943 | 3.7124 |
| | hari ke 20 | 1.06333 | .49775 | .058 | -.0457 | 2.1724 |

*. The mean difference is significant at the 0.05 level.

c. Hari ke 10

**Multiple Comparisons**

Dependent Variable: retensi

LSD

| (I) kelompok | (J) kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| hari ke 10 | hari ke 15 | -.12667 | .54714 | .823 | -1.3884 | 1.1350 |
| | hari ke 20 | -1.66667* | .54714 | .016 | -2.9284 | -.4050 |
| | hari ke 25 | -2.73000* | .54714 | .001 | -3.9917 | -1.4683 |
| hari ke 15 | hari ke 10 | .12667 | .54714 | .823 | -1.1350 | 1.3884 |
| | hari ke 20 | -1.54000* | .54714 | .023 | -2.8017 | -.2783 |
| | hari ke 25 | -2.60333* | .54714 | .001 | -3.8650 | -1.3416 |
| hari ke 20 | hari ke 10 | 1.66667* | .54714 | .016 | .4050 | 2.9284 |
| | hari ke 15 | 1.54000* | .54714 | .023 | .2783 | 2.8017 |
| | hari ke 25 | -1.06333 | .54714 | .088 | -2.3250 | .1984 |
| hari ke 25 | hari ke 10 | 2.73000* | .54714 | .001 | 1.4683 | 3.9917 |
| | hari ke 15 | 2.60333* | .54714 | .001 | 1.3416 | 3.8650 |
| | hari ke 20 | 1.06333 | .54714 | .088 | -.1984 | 2.3250 |

*. The mean difference is significant at the 0.05 level.

Dari uji LSD bahwa diketahui terdapat perbedaan yang signifikan

d. Hari ke 15

**Multiple Comparisons**

Dependent Variable: retensi

LSD

| (I) kelompok | (J) kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| hari ke 15 | hari ke 20 | -1.20667* | .39079 | .021 | -2.1629 | -.2504 |
| | hari ke 25 | -2.27000* | .39079 | .001 | -3.2262 | -1.3138 |
| hari ke 20 | hari ke 15 | 1.20667* | .39079 | .021 | .2504 | 2.1629 |
| | hari ke 25 | -1.06333* | .39079 | .035 | -2.0196 | -.1071 |
| hari ke 25 | hari ke 15 | 2.27000* | .39079 | .001 | 1.3138 | 3.2262 |
| | hari ke 20 | 1.06333* | .39079 | .035 | .1071 | 2.0196 |

*. The mean difference is significant at the 0.05 level.

Dari uji LSD bahwa diketahui terdapat perbedaan yang signifikan

e. Hari ke 20

**Multiple Comparisons**

Dependent Variable: absorbansi

LSD

| (I) kelompok | (J) kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| pH 3 TK | pH 3 K 1% | -.05000 | 2.06720 | .981 | -4.3621 | 4.2621 |
| | pH 3 K 1,1% | -1.03500 | 2.06720 | .622 | -5.3471 | 3.2771 |
| | pH 3 K 1,2% | -3.23167 | 2.06720 | .134 | -7.5438 | 1.0804 |
| pH 3 K 1% | pH 3 TK | .05000 | 2.06720 | .981 | -4.2621 | 4.3621 |
| | pH 3 K 1,1% | -.98500 | 2.06720 | .639 | -5.2971 | 3.3271 |
| | pH 3 K 1,2% | -3.18167 | 2.06720 | .139 | -7.4938 | 1.1304 |
| pH 3 K 1,1% | pH 3 TK | 1.03500 | 2.06720 | .622 | -3.2771 | 5.3471 |
| | pH 3 K 1% | .98500 | 2.06720 | .639 | -3.3271 | 5.2971 |
| | pH 3 K 1,2% | -2.19667 | 2.06720 | .301 | -6.5088 | 2.1154 |
| pH 3 K 1,2% | pH 3 TK | 3.23167 | 2.06720 | .134 | -1.0804 | 7.5438 |
| | pH 3 K 1% | 3.18167 | 2.06720 | .139 | -1.1304 | 7.4938 |
| | pH 3 K 1,1% | 2.19667 | 2.06720 | .301 | -2.1154 | 6.5088 |

f. Hari ke 25

**Multiple Comparisons**

Dependent Variable: absorbansi

LSD

| (I) kelompok | (J) kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| pH 3 TK | pH 3 K 1% | -.05000 | 2.06720 | .981 | -4.3621 | 4.2621 |
| | pH 3 K 1,1% | -1.03500 | 2.06720 | .622 | -5.3471 | 3.2771 |
| | pH 3 K 1,2% | -3.23167 | 2.06720 | .134 | -7.5438 | 1.0804 |
| pH 3 K 1% | pH 3 TK | .05000 | 2.06720 | .981 | -4.2621 | 4.3621 |
| | pH 3 K 1,1% | -.98500 | 2.06720 | .639 | -5.2971 | 3.3271 |
| | pH 3 K 1,2% | -3.18167 | 2.06720 | .139 | -7.4938 | 1.1304 |

| | | | | | | |
|---|---|---|---|---|---|---|
| pH 3 K 1,1% | pH 3 TK | 1.03500 | 2.06720 | .622 | -3.2771 | 5.3471 |
| | pH 3 K 1% | .98500 | 2.06720 | .639 | -3.3271 | 5.2971 |
| | pH 3 K 1,2% | -2.19667 | 2.06720 | .301 | -6.5088 | 2.1154 |
| pH 3 K 1,2% | pH 3 TK | 3.23167 | 2.06720 | .134 | -1.0804 | 7.5438 |
| | pH 3 K 1% | 3.18167 | 2.06720 | .139 | -1.1304 | 7.4938 |
| | pH 3 K 1,1% | 2.19667 | 2.06720 | .301 | -2.1154 | 6.5088 |

- **Pengolahan- Data Statistik Hasil Uji Stabilitas oleh T--emperatur**

1. Uji Normalitas

a. Suhu 30℃

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| temperatur | suhu 30℃ TK | .358 | 3 | . | .812 | 3 | .144 |
| | suhu 30℃ K 1,2% | .335 | 3 | . | .858 | 3 | .262 |

a. Lilliefors Significance Correction

Nilai signifikan (>0,05) data berdistribusi normal

b. Suhu 40℃

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| temperatur | suhu 40℃ TK | .244 | 3 | . | .972 | 3 | .676 |
| | suhu 40℃ K 1,2% | .240 | 3 | . | .974 | 3 | .692 |

a. Lilliefors Significance Correction

Nilai signifikan (>0,05) data berdistribusi normal

c. Suhu 80℃

**Tests of Normality**

| | kelompok | Kolmogorov-Smirnov[a] Statistic | df | Sig. | Shapiro-Wilk Statistic | df | Sig. |
|---|---|---|---|---|---|---|---|
| temperatur | suhu 80℃ TK | .184 | 3 | . | .999 | 3 | .930 |
| | suhu 80℃ K 1,2% | .362 | 3 | . | .804 | 3 | .124 |

a. Lilliefors Significance Correction

Nilai signifikan (>0,05) data berdistribusi norma

2. Uji beda 2 kelompok

a. Suhu 30℃

**Independent Samples Test**

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 95% Confidence Interval of the Difference | |
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Equal variances assumed | 1.816 | .249 | .236 | 4 | .825 | .38000 | 1.61009 | -4.09034 | 4.85034 |
| Equal variances not assumed | | | .236 | 3.207 | .828 | .38000 | 1.61009 | -4.56183 | 5.32183 |

Nilai signifikan 0,249 (>0,05) maka data homogen

Nilai sig (2-tailed) 0,828 (>0,05) maka tidak ada perbedaan yang signifikan antara 2 kelompok perlakuan

b. Suhu 40°C

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Temperatur | Equal variances assumed | .001 | .980 | -.023 | 4 | .982 | -.21333 | 9.08339 | -25.43286 | 25.00620 |
| | Equal variances not assumed | | | -.023 | 3.999 | .982 | -.21333 | 9.08339 | -25.43586 | 25.00920 |

Nilai signifikan 0,980 (>0,05) maka data homogen

Nilai sig (2-tailed) 0,982 (>0,05) maka ada perbedaan yang signifikan antara 2 kelompok perlakuan.

c. Suhu 80°C

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Temperatur | Equal variances assumed | .666 | .460 | 1.222 | 4 | .289 | 2.38667 | 1.95379 | -3.03794 | 7.81127 |
| | Equal variances not assumed | | | 1.222 | 3.724 | .294 | 2.38667 | 1.95379 | -3.20021 | 7.97354 |

Nilai signifikan 0,480 (>0,05) maka data homogen

Nilai sig (2-tailed) 0,294 (>0,05) maka tidak ada perbedaan yang signifikan antara 2 kelompok perlakuan.

**LAMPIRAN V**
**DOKUMENTASI HASIL PENELITIAN**

| No | Pengujian | Gambar |
|---|---|---|
| **1.** | **Uji golongan flavonoid** |  |
| **2.** | **Uji kualitatif antosian** |  |

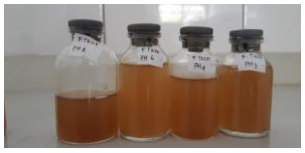
## 1. Pengujian Stabilitas Antosianin Terhadap pH Tanpa Kopigmen

Hari ke-1

Hari ke-5

Hari ke-10

Hari ke-15



Hari ke-20

Hari ke-25

**2. Pengujian Stabilitas Antosianin Terhadap pH Terkopigmentasi 1%**

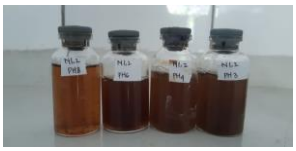
Hari ke-1

Hari ke-5

Hari ke-10

Hari ke-15

Hari ke-20



Hari ke-25

**3. Pengujian Stabilitas Antosianin Terhadap pH Terkopigmentasi 1,1%**

Hari ke-1

Hari ke-5

Hari ke-10

Hari ke-15

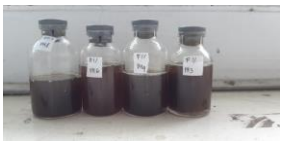
Hari ke-20

Harike-25

**4. Pengujian Stabilitas Antosianin Terhadap pH Terkopigmentasi 1,2%**

Hari ke-1

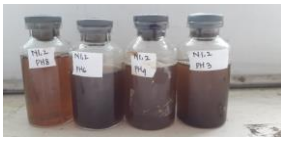
Hari ke-5



Hari ke-10

Hari ke-15

Hari ke-20



Hari ke-25

5. **Pengujian Stabilitas Antosianin Terhadap Temperatur**

30℃ TK

30℃

40℃ TK

40℃

80℃ TK

80℃