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**LAMPIRAN**

**Lampiran 1. SNI Sari Buah**

**SNI 3719 : 2014, Minuman sari buah**

**Tabel 20. Syarat mutu minuman sari buah**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Kriteria uji** | **Satuan** | **Persyaratan** |
| 1. | Keadaan   * 1. Aroma   2. Rasa   3. Warna | -  -  - | khas, normal  khas, normal  khas, normal |
| 2. | Padatan terlarut | ᵒBrix | Sesuai tabel 2 |
| 3. | Keasaman | % | Sesuai tabel 2 |
| 4. | Cemaran logam  4.1 Timbal (Pb)  4.2 Kadmium (Cd)  4.3 Timah (Sn)  4.4 Merkuri (Hg) | mg/kg  mg/kg  mg/kg  mg/kg | maks. 0,2  maks. 0,2  maks. 40,0/  maks. 250\*  maks. 0,03 |
| 5. | Cemaran arsen (As) | mg/kg | maks. 0,1 |
| 6. | Cemaran mikroba  6.1 Angka lempeng total  6.2 Kolifom  6.3 *Escherichia coli*  6.4 *Salmonella sp.*  6.5 *Staphylococcus aureus*  6.6 Kapang dan khamir | koloni/ml  koloni/ml  APM/ml  -  -  koloni/ml | maks. 1 x 104  maks. 20  < 3  negative/25 ml  negative/ml  maks. 1 x 102 |
| **CATATAN :** \*untuk produk pangan yang dikemas dalam kaleng | | | |

**Tabel 21. Padatan terlarut (ᵒBrix) dan keasaman untuk Minuman Sari Buah**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Jenis buah** | **Padatan terlarut**  **(ᵒBrix)** | **Keasaman\***  **(%)** |
| 1. | Anggur  (*Vitis vinifera*) | Min. 12,0 | Min. 0,25 |
| 2. | Apel  (*Pyrus malus*) | Min. 10,5 | Min. 0,30\*\* |
| 3. | Asam  (*Tamarindus indica*) | Min. 13,0 | Min. 0,3 |
| 4. | Delima  (*Punica granatum*) | Min. 12,0 | Min. 0,24 |
| 5. | Jambu biji merah  (*Psidium guajava* var.Pink Guava) | Min. 8,5 | Min. 0,2 |
| 6. | Jeruk  (*Citrus sinensis*) | Min. 11,2 | Min. 0,35 |
| 7. | Leci  (*Litchi chinensis*) | Min. 10,0 | Min. 0,15 |
| 8. | Mangga  (*Mangifera indica*) | Min. 11,0 | Min. 0,20 |
| 9. | Markisa  (*Pasiflora edulis*) | Min. 11,0 | Min. 0,19 |
| 10. | Melon  (*Curcumis melo L.*) | Min. 12,0 | Min. 0,15 |
| 11. | Nanas  (*Ananas comosus*) | Min. 10,0 | Min. 0,6 |
| 12. | Sirsak  (*Annona muricata L.*) | Min. 12,0 | Min. 0,45 |
| 13. | Strawberi  (*Fragaria x. Ananassa*) | Min. 7,5 | Min. 0,2 |
| 14. | Mengkudu  (*Morinda citrifolia*) | Min. 16,0 | Min. 0,9 |
| **CATATAN :** \*) Nilai keasaman berasal dari sari buah dan dapat ditambahkan  asidun  \*\*) sebagai asam malat  \*\*\*) sebagai asam tartarat | | | |

**Lampiran 2. Prosedur Kadar Vitamin C (AOAC, 1995)**

Ditimbang sampel sebanyak 5 gram lalu ditambahkan 100 ml aquades dan 5 ml amilum 1% kemudian di titrasi dengan larutan iodin 0,01N. titrasi dianggap selesai bila timbul warna biru stabil (AOAC, 1995).

Contoh :

Diketahui : W Sampel = 5 gram

VI2 = 1,60 gram

NI2 = 0,01 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**Lampiran 3. Pengukuran pH**

Tahap pertama pengkalibrasian pH meter nyalakan alat, dibiarkan stabil selama 10 menit kemudian disiapkan larutan buffer pH 4,00 dan 7,00 dan dibersihkan elektroda dengan air destilata, lap secara hati-hati dengan tisu. Ditekan tombol mode hingga terbaca CALIBRATE 7-4 setelah itu celupkan elektroda pada buffer pH 7,00 lalu ditunggu sampai muncul angka 7,00 dan tekan YES. Selanjutnya elektroda dibilas dengan air destilata dan dikeringkan dengan tisu kemudian dicelupkan elektroda pada buffer pH 4, kemudian ditunggu sampai muncul angka 4,00 dan tekan YES kemudian dibilas elektroda dengan air destilata. Tahap kedua adalah pengukuran contoh, pertama-tama elektroda dibilas dengan air destilata dan dikeringkan dengan tisu. Elektroda dimasukkan ke dalam gelas piala berisi contoh. Selanjutnya dibiarkan beberapa saat sampai pembacaan stabil kemudian dicatat pH yang terbaca. Elektroda dibilas dengan air destilata dan dikeringkan dengan tisu.

**Lampiran 4. Prosedur Analisis Aktivitas Antioksidan Metode DPPH**

Modifikasi Santosa *et al.,* 1998 dan Andayani (2008)

* + 1. Pembuatan Larutan *Diphenylpicrylhydrazil* (DPPH)

DPPH

* Ditimbang sebanyak 4 mg
* Dimasukkan kedalam vial
* Ditambahkan metanol sebanyak 25 mL
* Diaduk sampai larut
* Tutup vial dengan rapat dan dilapisi permukaan vial

Larutan DPPH 4x10-4M

1. Pembuatan larutan *Stock*

Sampel

* Ditimbang sebanyak 5 mg (untuk fraksi etil asetat) dan 50 mg (untuk fraksi heksan dan H2O)
* Dimasukkan kedalam vial 10 mL
* Ditambahkan metanol sebanyak 5 mL
* Diaduk sampai larut
* Gunakan *ultrasonic cleaner* jika sampel sulit larut

Larutan sampel 1000 ppm dan 10.000 ppm

1. Pengujian sampel

Sampel

* Dimasukkan berturut-turut larutan *stock* dan metanol sesuai dengan volume pada tabel pada masing-masing tabung reaksi (A-E)
* Kedalam tabung reaksi (A-E) ditambahkan larutan DPPH sebanyak 0,6 mL
* Dibiarkan selama 30 menit
* Diukur menggunakan spektrofotometri UV-Vis (**Kuvet blanko diisi dengan metanol**). Diukur pada panjang gelombang 517 nm.
* Nilai absorbansi dari setiap variasi konsentrasi dicatat dan dihitung nilai IC50

Nilai IC50

**Lampiran 5.Formulir Uji Kesukaan**

**FORMULIR PENGUJIAN ORGANOLEPTIK**

**Nama Panelis :**

**Tanggal :**

**Pekerjaan :**

**Tanda Tangan :**

**Instruksi :**

Dihadapan saudara telah tersedia sampel **Minuman fungsional sari belimbing wuluh dan sari temulawak** dan anda dimintai untuk memberikan penilaian pada atribut yang sesuai pada setiap kode sampel berdasarkan skala numeric sesuai dengan pernyataan dibawah ini :

|  |  |
| --- | --- |
| **Skala Hedonik** | **Skala Numerik** |
| Sangat Suka | 6 |
| Suka | 5 |
| Agak Suka | 4 |
| Agak Tidak Suka | 3 |
| Tidak Suka | 2 |
| Sangat Tidak Suka | 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Kode** | **Atribut** | | |
| **Warna** | **Aroma** | **Rasa** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Prosedur Analisis Uji Hedonik (Kartika, 1988)**

**Lampiran 6. Kebutuhan Analisis**

* **Penelitian Tahap II Analisis Karakteristik Bahan Baku**

**Temulawak :**

Kadar Vitamin C = 5 ml

pH temulawak = 50 ml

Aktivitas Antioksidan = 10 ml

**Belimbing wuluh :**

Kadar Vitamin C = 5 ml

pH temulawak = 50 ml

Aktivitas Antioksidan = 10 ml

* **Penelitian Tahap III (Basis 300 ml)**

**Gula stevia : 3 gram**

**Air : 180 gram**

**Basis : 300 gram**

**Basis 300 Formulasi 3 : 1**

Belimbing wuluh =

Temulawak = %

Gula Stevia =

Air =

**Basis 300 Formulasi 2 : 1**

Belimbing wuluh =

Temulawak =

Gula Stevia =

Air =

**Basis 300 Formulasi 1 : 1**

Belimbing wuluh =

Temulawak =

Gula Stevia =

Air =

**Basis 300 Formulasi 1 : 2**

Belimbing wuluh =

Temulawak =

Gula Stevia =

Air =

**Basis 300 Formulasi 1 : 3**

Belimbing wuluh = %

Temulawak =

Gula Stevia =

Air =

**Lampiran 7. Perhitungan Kebutuhan Bahan Baku**

|  |  |  |
| --- | --- | --- |
| Nama Bahan | Basis (%) | Bobot (gram) |
| Belimbing Wuluh | 19,5 | 58,5 |
| Temulawak | 19,5 | 58,5 |
| Gula Stevia | 1 | 3 |
| Air | 60 | 180 |
| Total | 100 | 300 |

1. **Perbandingan sari belimbing wuluh dan sari temulawak**

|  |  |  |
| --- | --- | --- |
| Perbandingan  Belimbing wuluh : Temulawak | Perbandingan Basis (%) | Perbandingan bobot (gram) |
| 1 : 3 | 9,75 : 29,25 | 29,25 : 87,75 |
| 1 : 2 | 13 : 26 | 39 : 78 |
| 1 : 1 | 19,5 : 19,5 | 58,5 : 58,5 |
| 2 : 1 | 26 : 13 | 78 : 39 |
| 3 : 1 | 29,25 : 9,75 | 87,75 : 29,25 |

1. **Total Kebutuhan Sari Belimbing Wuluh**

|  |  |  |
| --- | --- | --- |
| Perbandingan | Basis (%) | Bobot (gram) |
| 1 : 3 | 9,75 | 29,25 |
| 1 : 2 | 13 | 39 |
| 1 : 1 | 19,5 | 58,5 |
| 2 : 1 | 26 | 78 |
| 3 : 1 | 29,25 | 87,75 |
| Total |  | 292,5 |

Allowance 20% = 292,5 x 20% = 58,5 gram

292,5 g + 58,5 g = 351 gram

1. **Total Kebutuhan Sari Temulawak**

|  |  |  |
| --- | --- | --- |
| Perbandingan | Basis (%) | Bobot (gram) |
| 1 : 3 | 29,25 | 87,75 |
| 1 : 2 | 26 | 78 |
| 1 : 1 | 19,5 | 58,5 |
| 2 : 1 | 13 | 39 |
| 3 : 1 | 9,75 | 29,25 |
| Total |  | 292,5 |

Allowance 20% = 292,5 x 20% = 58,5 gram

292,5 g + 58,5 g = 351 gram

1. **Kebutuhan Bahan Baku Respon Kimia**
2. Kadar Vitamin C

Wsampel = 5 gram

Jumlah Pengujian = 2 kali

Jumlah Sampel = 5 gram

5 kali Perbandingan = (5 x 5) x 2 (ulangan) = 50 gram

Allowance 20% = 20% x 50 = 10 gram

Total = 5 gram + 50 gram

= 55 gram

1. Uji pH

Wsampel = 50 gram

Jumlah Pengujian = 1 kali

Jumlah Sampel = 50 gram

5 kali Perbandingan = 50 x 5 = 250 gram

Allowance 20% = 20% x 250 = 50 gram

Total = 250 gram + 50 gram

= 300 gram

1. Aktivitas Antioksidan

Wsampel = 1 gram

Jumlah Pengujian = 1 kali

Jumlah Sampel = 1 gram

5 kali perbandingan = 1 x 5 = 5 gram

Allowance 20% = 20% x 5 = 1 gram

Total = 5 gram + 1 gram

= 6 gram

**Lampiran 8. Data Hasil Penelitian Organoleptik Tahap I**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panelis** | **Sampel** | | | | | | | | |
| **153** | | | **135** | | | **173** | | |
| **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** |
| 1 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 1 |
| 2 | 5 | 5 | 2 | 6 | 3 | 2 | 5 | 3 | 3 |
| 3 | 6 | 4 | 1 | 3 | 5 | 1 | 3 | 4 | 2 |
| 4 | 4 | 4 | 4 | 5 | 4 | 1 | 6 | 5 | 5 |
| 5 | 4 | 4 | 3 | 4 | 5 | 3 | 4 | 6 | 4 |
| 6 | 5 | 5 | 3 | 6 | 5 | 4 | 5 | 5 | 2 |
| 7 | 4 | 5 | 5 | 3 | 6 | 6 | 3 | 5 | 3 |
| 8 | 5 | 5 | 2 | 2 | 5 | 3 | 6 | 5 | 1 |
| 9 | 6 | 5 | 4 | 6 | 6 | 2 | 4 | 6 | 5 |
| 10 | 5 | 6 | 1 | 5 | 5 | 3 | 2 | 6 | 3 |
| 11 | 4 | 6 | 2 | 3 | 3 | 6 | 6 | 4 | 2 |
| 12 | 3 | 3 | 3 | 5 | 4 | 5 | 5 | 5 | 1 |
| 13 | 2 | 2 | 4 | 6 | 5 | 4 | 3 | 5 | 2 |
| 14 | 6 | 3 | 2 | 4 | 6 | 2 | 5 | 6 | 4 |
| 15 | 5 | 5 | 5 | 4 | 5 | 2 | 5 | 4 | 3 |
| 16 | 4 | 4 | 6 | 6 | 5 | 2 | 6 | 4 | 4 |
| 17 | 5 | 6 | 3 | 6 | 5 | 4 | 4 | 5 | 3 |
| 18 | 3 | 4 | 4 | 4 | 4 | 1 | 4 | 5 | 2 |
| 19 | 5 | 5 | 2 | 5 | 6 | 5 | 4 | 3 | 5 |
| 20 | 4 | 5 | 2 | 5 | 6 | 3 | 6 | 3 | 6 |
| 21 | 6 | 6 | 2 | 6 | 5 | 1 | 6 | 3 | 4 |
| 22 | 3 | 3 | 1 | 3 | 4 | 2 | 6 | 4 | 3 |
| 23 | 6 | 4 | 3 | 4 | 6 | 4 | 3 | 6 | 4 |
| 24 | 5 | 2 | 4 | 6 | 5 | 3 | 3 | 5 | 5 |
| 25 | 3 | 5 | 5 | 6 | 6 | 4 | 3 | 4 | 6 |
| 26 | 2 | 4 | 3 | 6 | 5 | 3 | 5 | 5 | 4 |
| 27 | 5 | 6 | 2 | 4 | 6 | 5 | 5 | 5 | 3 |
| 28 | 6 | 5 | 4 | 5 | 5 | 6 | 5 | 4 | 5 |
| 29 | 5 | 5 | 4 | 6 | 5 | 5 | 6 | 5 | 6 |
| 30 | 6 | 6 | 4 | 6 | 5 | 6 | 5 | 5 | 5 |
| **Jumlah** | **136** | **136** | **93** | **144** | **149** | **101** | **137** | **139** | **106** |
| **Rata-rata** | **4.53** | **4.53** | **3.10** | **4.80** | **4.97** | **3.37** | **4.57** | **4.63** | **3.53** |

8.1. Perhitungan Warna

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panelis** | **Kode Sampel** | | | | | | **Jumlah** | | **Rata-rata** | |
| **a1** | | **a2** | | **a3** | |
| **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** |
| 1 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 12 | 6.36 | 4.00 | 2.12 |
| 2 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 16 | 7.24 | 5.33 | 2.41 |
| 3 | 6 | 2.55 | 3 | 1.87 | 3 | 1.87 | 12 | 6.29 | 4.00 | 2.10 |
| 4 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 15 | 7.02 | 5.00 | 2.34 |
| 5 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 12 | 6.36 | 4.00 | 2.12 |
| 6 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 16 | 7.24 | 5.33 | 2.41 |
| 7 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 10 | 5.86 | 3.33 | 1.95 |
| 8 | 5 | 2.35 | 6 | 2.55 | 2 | 1.58 | 13 | 6.48 | 4.33 | 2.16 |
| 9 | 6 | 2.55 | 4 | 2.12 | 6 | 2.55 | 16 | 7.22 | 5.33 | 2.41 |
| 10 | 5 | 2.35 | 2 | 1.58 | 5 | 2.35 | 12 | 6.27 | 4.00 | 2.09 |
| 11 | 4 | 2.12 | 6 | 2.55 | 3 | 1.87 | 13 | 6.54 | 4.33 | 2.18 |
| 12 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 13 | 6.56 | 4.33 | 2.19 |
| 13 | 2 | 1.58 | 3 | 1.87 | 6 | 2.55 | 11 | 6.00 | 3.67 | 2.00 |
| 14 | 6 | 2.55 | 5 | 2.35 | 4 | 2.12 | 15 | 7.02 | 5.00 | 2.34 |
| 15 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 14 | 6.81 | 4.67 | 2.27 |
| 16 | 4 | 2.12 | 6 | 2.55 | 6 | 2.55 | 16 | 7.22 | 5.33 | 2.41 |
| 17 | 5 | 2.35 | 4 | 2.12 | 6 | 2.55 | 15 | 7.02 | 5.00 | 2.34 |
| 18 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 11 | 6.11 | 3.67 | 2.04 |
| 19 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 14 | 6.81 | 4.67 | 2.27 |
| 20 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 15 | 7.02 | 5.00 | 2.34 |
| 21 | 6 | 2.55 | 6 | 2.55 | 6 | 2.55 | 18 | 7.65 | 6.00 | 2.55 |
| 22 | 3 | 1.87 | 6 | 2.55 | 3 | 1.87 | 12 | 6.29 | 4.00 | 2.10 |
| 23 | 6 | 2.55 | 3 | 1.87 | 4 | 2.12 | 13 | 6.54 | 4.33 | 2.18 |
| 24 | 5 | 2.35 | 3 | 1.87 | 6 | 2.55 | 14 | 6.77 | 4.67 | 2.26 |
| 25 | 3 | 1.87 | 3 | 1.87 | 6 | 2.55 | 12 | 6.29 | 4.00 | 2.10 |
| 26 | 2 | 1.58 | 5 | 2.35 | 6 | 2.55 | 13 | 6.48 | 4.33 | 2.16 |
| 27 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 14 | 6.81 | 4.67 | 2.27 |
| 28 | 6 | 2.55 | 5 | 2.35 | 5 | 2.35 | 16 | 7.24 | 5.33 | 2.41 |
| 29 | 5 | 2.35 | 6 | 2.55 | 6 | 2.55 | 17 | 7.44 | 5.67 | 2.48 |
| 30 | 6 | 2.55 | 5 | 2.35 | 6 | 2.55 | 17 | 7.44 | 5.67 | 2.48 |
| **Jumlah** | 136 | 66.79 | 137 | 67.04 | 144 | 68.58 | 417 | 202.4 | 139 | 67.47 |
| **Rata-rata** | 4.53 | 2.23 | 4.57 | 2.23 | 4.80 | 2.29 | 13.90 | 6.75 | 4.63 | 2.25 |

Tabel 22. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Warna Minuman Fungsional

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | **Jumlah** |
| **a1** | **a2** | **a3** |
| I | 2.27 | 2.23 | 2.26 | 6.75 |
| II | 2.23 | 2.17 | 2.09 | 6.49 |
| III | 2.14 | 2.23 | 2.34 | 6.70 |
| IV | 2.30 | 2.25 | 2.30 | 6.85 |
| V | 2.21 | 2.30 | 2.44 | 6.95 |
| **Jumlah** | 11.13 | 11.17 | 11.43 | **33.73** |
| **Rata-rata** | 2.23 | 2.23 | 2.29 | 6.75 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 23. Analisis Variansi (ANAVA) Atribut Warna Minuman

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Keragaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.0402 | 0.01005 | 1.63tn | 4.46 |
| Perlakuan | 2 | 0.0104 | 0.00521 |  |  |
| Galat | 8 | 0.0493 | 0.00616 |  |  |
| Total | 14 | 0.0999 |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung < F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak tidak berpengaruh nyata terhadap atribut warna, maka kita memutuskan tidak menerima Ho dan tidak perlu dilakukan uji lanjut duncan.

9.2. Perhitungan Aroma

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panelis** | **Kode Sampel** | | | | | | **Jumlah** | | **Rata-rata** | |
| **a1** | | **a2** | | **a3** | |
| **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** |
| 1 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 12 | 6.36 | 4.00 | 2.12 |
| 2 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 11 | 6.09 | 3.67 | 2.03 |
| 3 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 13 | 6.59 | 4.33 | 2.20 |
| 4 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 13 | 6.59 | 4.33 | 2.20 |
| 5 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 15 | 7.02 | 5.00 | 2.34 |
| 6 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 15 | 7.04 | 5.00 | 2.35 |
| 7 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 16 | 7.24 | 5.33 | 2.41 |
| 8 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 15 | 7.04 | 5.00 | 2.35 |
| 9 | 5 | 2.35 | 6 | 2.55 | 6 | 2.55 | 17 | 7.44 | 5.67 | 2.48 |
| 10 | 6 | 2.55 | 6 | 2.55 | 5 | 2.35 | 17 | 7.44 | 5.67 | 2.48 |
| 11 | 6 | 2.55 | 4 | 2.12 | 3 | 1.87 | 13 | 6.54 | 4.33 | 2.18 |
| 12 | 3 | 1.87 | 5 | 2.35 | 4 | 2.12 | 12 | 6.34 | 4.00 | 2.11 |
| 13 | 2 | 1.58 | 5 | 2.35 | 5 | 2.35 | 12 | 6.27 | 4.00 | 2.09 |
| 14 | 3 | 1.87 | 6 | 2.55 | 6 | 2.55 | 15 | 6.97 | 5.00 | 2.32 |
| 15 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 14 | 6.81 | 4.67 | 2.27 |
| 16 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 13 | 6.59 | 4.33 | 2.20 |
| 17 | 6 | 2.55 | 5 | 2.35 | 5 | 2.35 | 16 | 7.24 | 5.33 | 2.41 |
| 18 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 13 | 6.59 | 4.33 | 2.20 |
| 19 | 5 | 2.35 | 3 | 1.87 | 6 | 2.55 | 14 | 6.77 | 4.67 | 2.26 |
| 20 | 5 | 2.35 | 3 | 1.87 | 6 | 2.55 | 14 | 6.77 | 4.67 | 2.26 |
| 21 | 6 | 2.55 | 3 | 1.87 | 5 | 2.35 | 14 | 6.77 | 4.67 | 2.26 |
| 22 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 11 | 6.11 | 3.67 | 2.04 |
| 23 | 4 | 2.12 | 6 | 2.55 | 6 | 2.55 | 16 | 7.22 | 5.33 | 2.41 |
| 24 | 2 | 1.58 | 5 | 2.35 | 5 | 2.35 | 12 | 6.27 | 4.00 | 2.09 |
| 25 | 5 | 2.35 | 4 | 2.12 | 6 | 2.55 | 15 | 7.02 | 5.00 | 2.34 |
| 26 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 14 | 6.81 | 4.67 | 2.27 |
| 27 | 6 | 2.55 | 5 | 2.35 | 6 | 2.55 | 17 | 7.44 | 5.67 | 2.48 |
| 28 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 14 | 6.81 | 4.67 | 2.27 |
| 29 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 15 | 7.04 | 5.00 | 2.35 |
| 30 | 6 | 2.55 | 5 | 2.35 | 5 | 2.35 | 16 | 7.24 | 5.33 | 2.41 |
| **Jumlah** | 136 | 66.83 | 139 | 67.68 | 149 | 69.92 | 424 | 204.5 | 141.3 | 68.15 |
| **Rata-rata** | 4.53 | 2.23 | 4.63 | 2.26 | 4.97 | 2.33 | 14.13 | 6.82 | 4.71 | 2.27 |

Tabel 24. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Aroma Minuman Fungsional

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | **Jumlah** |
| **a1** | **a2** | **a3** |
| I | 2.20 | 2.23 | 2.19 | 6.61 |
| II | 2.33 | 2.38 | 2.30 | 7.01 |
| III | 2.10 | 2.30 | 2.34 | 6.74 |
| IV | 2.14 | 2.10 | 2.41 | 6.65 |
| V | 2.38 | 2.27 | 2.41 | 7.06 |
| **Jumlah** | 11.14 | 11.28 | 11.65 | **34.08** |
| **Rata-rata** | 2.23 | 2.26 | 2.33 | 6.82 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 25. Analisis Variansi (ANAVA) Atribut Aroma Minuman

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber keragaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.05658 | 0.01414 | 1.46tn | 4.46 |
| Perlakuan | 2 | 0.02817 | 0.01409 |  |  |
| Galat | 8 | 0.07757 | 0.0097 |  |  |
| Total | 14 |  |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung < F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak tidak berpengaruh nyata terhadap atribut aroma, maka kita memutuskan tidak menerima Ho dan tidak perlu dilakukan uji lanjut duncan.

9.3. Perhitungan Rasa

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panelis** | **Kode Sampel** | | | | | | **Jumlah** | | **Rata-rata** | |
| **a1** | | **a2** | | **a3** | |
| **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** | **DA** | **DT** |
| 1 | 3 | 1.87 | 3 | 1.87 | 1 | 1.22 | 7 | 4.97 | 2.33 | 1.66 |
| 2 | 2 | 1.58 | 2 | 1.58 | 3 | 1.87 | 7 | 5.03 | 2.33 | 1.68 |
| 3 | 1 | 1.22 | 1 | 1.22 | 2 | 1.58 | 4 | 4.03 | 1.33 | 1.34 |
| 4 | 4 | 2.12 | 1 | 1.22 | 5 | 2.35 | 10 | 5.69 | 3.33 | 1.90 |
| 5 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 10 | 5.86 | 3.33 | 1.95 |
| 6 | 3 | 1.87 | 4 | 2.12 | 2 | 1.58 | 9 | 5.57 | 3.00 | 1.86 |
| 7 | 5 | 2.35 | 6 | 2.55 | 3 | 1.87 | 14 | 6.77 | 4.67 | 2.26 |
| 8 | 2 | 1.58 | 3 | 1.87 | 1 | 1.22 | 6 | 4.68 | 2.00 | 1.56 |
| 9 | 4 | 2.12 | 2 | 1.58 | 5 | 2.35 | 11 | 6.05 | 3.67 | 2.02 |
| 10 | 1 | 1.22 | 3 | 1.87 | 3 | 1.87 | 7 | 4.97 | 2.33 | 1.66 |
| 11 | 2 | 1.58 | 6 | 2.55 | 2 | 1.58 | 10 | 5.71 | 3.33 | 1.90 |
| 12 | 3 | 1.87 | 5 | 2.35 | 1 | 1.22 | 9 | 5.44 | 3.00 | 1.81 |
| 13 | 4 | 2.12 | 4 | 2.12 | 2 | 1.58 | 10 | 5.82 | 3.33 | 1.94 |
| 14 | 2 | 1.58 | 2 | 1.58 | 4 | 2.12 | 8 | 5.28 | 2.67 | 1.76 |
| 15 | 5 | 2.35 | 2 | 1.58 | 3 | 1.87 | 10 | 5.80 | 3.33 | 1.93 |
| 16 | 6 | 2.55 | 2 | 1.58 | 4 | 2.12 | 12 | 6.25 | 4.00 | 2.08 |
| 17 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 10 | 5.86 | 3.33 | 1.95 |
| 18 | 4 | 2.12 | 1 | 1.22 | 2 | 1.58 | 7 | 4.93 | 2.33 | 1.64 |
| 19 | 2 | 1.58 | 5 | 2.35 | 5 | 2.35 | 12 | 6.27 | 4.00 | 2.09 |
| 20 | 2 | 1.58 | 3 | 1.87 | 6 | 2.55 | 11 | 6.00 | 3.67 | 2.00 |
| 21 | 2 | 1.58 | 1 | 1.22 | 4 | 2.12 | 7 | 4.93 | 2.33 | 1.64 |
| 22 | 1 | 1.22 | 2 | 1.58 | 3 | 1.87 | 6 | 4.68 | 2.00 | 1.56 |
| 23 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 11 | 6.11 | 3.67 | 2.04 |
| 24 | 4 | 2.12 | 3 | 1.87 | 5 | 2.35 | 12 | 6.34 | 4.00 | 2.11 |
| 25 | 5 | 2.35 | 4 | 2.12 | 6 | 2.55 | 15 | 7.02 | 5.00 | 2.34 |
| 26 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 10 | 5.86 | 3.33 | 1.95 |
| 27 | 2 | 1.58 | 5 | 2.35 | 3 | 1.87 | 10 | 5.80 | 3.33 | 1.93 |
| 28 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 15 | 7.02 | 5.00 | 2.34 |
| 29 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 15 | 7.02 | 5.00 | 2.34 |
| 30 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 15 | 7.02 | 5.00 | 2.34 |
| **Jumlah** | 93 | 55.97 | 101 | 57.66 | 106 | 59.12 | 300 | 173 | 100 | 57.588 |
| **Rata-rata** | 3.10 | 1.87 | 3.37 | 1.92 | 3.53 | 1.97 | 10.00 | 5.76 | 3.33 | 1.92 |

Tabel 26. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Rasa Minuman Fungsional

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | **Jumlah** |
| **a1** | **a2** | **a3** |
| I | 1.76 | 1.65 | 1.79 | 5.19 |
| II | 1.79 | 2.13 | 1.69 | 5.60 |
| III | 2.10 | 1.70 | 1.86 | 5.66 |
| IV | 1.66 | 1.84 | 2.23 | 5.72 |
| V | 2.03 | 2.30 | 2.30 | 6.62 |
| **Jumlah** | 9.33 | 9.61 | 9.85 | **28.79** |
| **Rata-rata** | 1.87 | 1.92 | 1.97 | 5.76 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 27. Analisis Variansi (ANAVA) Atribut Rasa Minuman

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber keraagaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.36648 | 0.09162 | 1.90tn | 4.46 |
| Perlakuan | 2 | 0.02759 | 0.01379 |  |  |
| Galat | 8 | 0.38597 | 0.04825 |  |  |
| Total | 14 | 0.78004 |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung < F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak tidak berpengaruh nyata terhadap atribut rasa, maka kita memutuskan tidak menerima Ho dan tidak perlu dilakukan uji lanjut duncan.

Lampiran 9. Konsentrasi Sampel Terpilih

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Kode sampel** | **Nilai Hedonik** | | | **Rata-rata** |
| **Warna** | **Aroma** | **Rasa** |
| 135 | 4.53 | 4.53 | 3.10 | 4.06 |
| 153 | 4.57 | 4.63 | 3.37 | 4.19 |
| 173 | 4.80 | 4.97 | 3.53 | 4.43 |

Kesimpulan :

Berdasarkan tabel rata-rata diatas, diketahui bahwa sampel yang memiliki nilai tertinggi yaitu pada kode sampel 173 pada formulasi sebagai berikut :

Gula : 1%

Air : 60%

Sari belimbing wuluh : 29%

Sari temulawak : 10%

**Lampiran 10. Hasil Analisis Kadar Vitamin C Bahan Baku Tahap II**

**Perhitungan :**

**Ulangan 1**

**1. Belimbing wuluh**

Diketahui : W Sampel = 5 gram

VI2 = 1,30 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**2. Temulawak**

Diketahui : W Sampel = 6,2 gram

VI2 = 0,3

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**Ulangan 2**

**1. Belimbing wuluh**

Diketahui : W Sampel = 5,2 gram

VI2 = 1,20 gram

NI2 = 0,0126 N

BE Vit C = 88.065

Kadar Vitamin C =

Kadar Vitamin C =

**2. Temulawak**

Diketahui : W Sampel = 5,8 gram

VI2 = 0,3 gram

NI2 = 0,0126N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**Nilai Rata-Rata**

1. **Belimbing Wuluh**
2. **Temulawak**

**Lampiran 11. Hasil Pengujian Aktivitas Antioksidan Bahan Baku Tahap II**

Fraksi Metanol (Belimbing Wuluh)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan (%)** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.935 | 0.934 | 0.000 | 0.000 |
| 20 | 0.611 | 0.610 | 34.652 | 34.690 |
| 40 | 0.502 | 0.501 | 46.310 | 46.360 |
| 60 | 0.426 | 0.425 | 54.439 | 54.497 |
| 80 | 0.328 | 0.327 | 64.920 | 64.989 |

1. Belimbing wuluh (ke – 1)
   1. Konsentrasi 20 ppm :

* 1. Konsentrasi 40 ppm :

* 1. Konsentrasi 60 ppm :

* 1. Konsentrasi 80 ppm :

y = 0.4947x + 25.348

x =

Belimbing wuluh (ke-2)

1. Konsentrasi 20 ppm :

1. Konsentrasi 40 ppm :

1. Konsentrasi 60 ppm :

1. Konsentrasi 80 ppm :

y = 0.4952x + 25.375

x =

* Rata-rata aktivitas antioksidan belimbing wuluh :

IC50 =

Fraksi Metanol (Temulawak)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan (%)** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.933 | 0.932 | 0.000 | 0.000 |
| 20 | 0.765 | 0.764 | 18.006 | 18.026 |
| 40 | 0.659 | 0.658 | 29.368 | 29.399 |
| 60 | 0.587 | 0.586 | 37.085 | 37.124 |
| 80 | 0.495 | 0.494 | 46.945 | 46.996 |

1. Temulawak (ke – 1)
   1. Konsentrasi 20 ppm :

* 1. Konsentrasi 40 ppm :

* 1. Konsentrasi 60 ppm :

* 1. Konsentrasi 80 ppm :

y = 0.4727x + 9.2176

x =

Temulawak (ke – 2)

1. Konsentrasi 20 ppm :

1. Konsentrasi 40 ppm :

1. Konsentrasi 60 ppm :

1. Konsentrasi 80 ppm :

y = 0.4732x + 9.2275

x =

* Rata-rata Aktivitas Antioksidan Temulawak IC50 =

**Lampiran 12. Hasil Analisis Kadar Vit. C Minuman Fungsional Tahap III**

**Ulangan 1.**

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (9,75% : 29,25%)**

Diketahui : W Sampel = 5,2 gram

VI2 = 0,60 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (13% : 26%)**

Diketahui : W Sampel = 5,3 gram

VI2 = 0,80 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (19,5% : 19,5%)**

Diketahui : W Sampel = 5,2 gram

VI2 = 0,90 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (26% : 13%)**

Diketahui : W Sampel = 5,2 gram

VI2 = 1,00 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (29,25% : 9,75%)**

Diketahui : W Sampel = 5 gram

VI2 = 1 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**Ulangan 2.**

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (9,75% : 29,25%)**

Diketahui : W Sampel = 5 gram

VI2 = 0,50 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (13% : 26%)**

Diketahui : W Sampel = 5,1 gram

VI2 = 0,70 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (19,5% : 19,5%)**

Diketahui : W Sampel = 5,1 gram

VI2 = 0,80 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (26% : 13%)**

Diketahui : W Sampel = 5,3 gram

VI2 = 1,00 gram

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

1. **Minuman Fungsional sari belimbing wuluh dan sari temulawak**

**Sari belimbing wuluh : sari temulawak (29,25% : 9,75%)**

Diketahui : W Sampel = 5 gram

VI2 = 1,00

NI2 = 0,0126 N

BE Vit C = 88,065

Kadar Vitamin C =

Kadar Vitamin C =

**Nilai Rata-Rata**

1. **Minuman 9,75% : 29,25%**
2. **Minuman 13% : 26%**
3. **Minuman 19,5% : 19,5%**
4. **Minuman 26% : 13%**
5. **Minuman 29,25% : 9,75%**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Belimbing Wuluh** | | | | | |
| **n** | **Konsentrasi (x)** | **Vitamin C (y)** | **x2** | **y2** | **xy** |
| 1 | 9.75 | 11.95 | 95.0625 | 142.8025 | 116.5125 |
| 2 | 13 | 15.98 | 169 | 255.3604 | 207.74 |
| 3 | 19.5 | 18.3 | 380.25 | 334.89 | 356.85 |
| 4 | 26 | 21.13 | 676 | 446.4769 | 549.38 |
| 5 | 29.25 | 22.19 | 855.5625 | 492.3961 | 649.0575 |
| **Σ = 5** | **Σ = 97.5** | **Σ 89.55** | **Σ 2175.875** | **Σ 1671.9259** | **Σ 1879.54** |

= = 8.44384

b = = = 0.4854437

= 0.974949

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Temulawak** | | | | | |
| **n** | **Konsentrasi (x)** | **Vitamin C (y)** | **x2** | **y2** | **xy** |
| 1 | 29.25 | 11.95 | 855.5625 | 142.8025 | 349.5375 |
| 2 | 26 | 15.98 | 676 | 255.3604 | 415.48 |
| 3 | 19.5 | 18.3 | 380.25 | 334.89 | 356.85 |
| 4 | 13 | 21.13 | 169 | 446.4769 | 274.69 |
| 5 | 9.75 | 22.19 | 95.0625 | 492.3961 | 216.3525 |
| **Σ = 5** | **Σ = 97.5** | **89.55** | **Σ 2175.875** | **Σ 1671.9259** | **Σ 1612.91** |

= = 27.376

b = = = -0.4854

= -0.9749

**Lampiran 13. Hasil Analisis Aktivitas Antioksidan Minuman Fungsional Tahap III**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.927 | 0.926 | 0.000 | 0.000 |
| 100 | 0.735 | 0.734 | 20.712 | 20.734 |
| 200 | 0.637 | 0.636 | 31.284 | 31.317 |
| 300 | 0.532 | 0.531 | 42.611 | 42.657 |
| 400 | 0.447 | 0.446 | 51.780 | 51.836 |

1. **Belimbing Wuluh : Temulawak ( 1 : 3 )**

* **Ke – 1**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* **Ke – 2**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* Aktivitas Antioksidan Belimbing wuluh IC50 =

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.952 | 0.951 | 0.000 | 0.000 |
| 100 | 0.725 | 0.724 | 23.845 | 23.870 |
| 200 | 0.619 | 0.618 | 34.979 | 35.016 |
| 300 | 0.512 | 0.511 | 46.218 | 46.267 |
| 400 | 0.423 | 0.422 | 55.567 | 55.626 |

1. **Belimbing Wuluh : Temulawak ( 1 : 2 )**

* **Ke – 1**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* **Ke – 2**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* Aktivitas Antioksidan Belimbing wuluh IC50 =

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.921 | 0.92 | 0.000 | 0.000 |
| 100 | 0.721 | 0.720 | 21.716 | 21.739 |
| 200 | 0.626 | 0.625 | 32.030 | 32.065 |
| 300 | 0.522 | 0.521 | 43.322 | 43.370 |
| 400 | 0.434 | 0.433 | 52.877 | 52.935 |

1. **Belimbing Wuluh : Temulawak ( 1 : 1 )**

* **Ke – 1**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* **Ke – 2**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* Aktivitas Antioksidan Belimbing wuluh IC50 =

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **konsentrasi** | **nilai absorbansi** | | **nilai penghambatan** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.910 | 0.909 | 0.000 | 0.000 |
| 100 | 0.725 | 0.724 | 20.330 | 20.352 |
| 200 | 0.631 | 0.630 | 30.659 | 30.693 |
| 300 | 0.529 | 0.528 | 41.868 | 41.914 |
| 400 | 0.443 | 0.441 | 51.319 | 51.485 |

1. **Belimbing Wuluh : Temulawak ( 2 : 1 )**

* **Ke – 1**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* **Ke – 2**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* Aktivitas Antioksidan Belimbing wuluh IC50 =

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Konsentrasi** | **Nilai absorbansi** | | **Nilai penghambatan** | |
| ppm | ke-1 | ke-2 | ke-1 | ke-2 |
| 0 | 0.913 | 0.912 | 0.000 | 0.000 |
| 100 | 0.731 | 0.730 | 19.934 | 19.956 |
| 200 | 0.637 | 0.636 | 30.230 | 30.263 |
| 300 | 0.535 | 0.534 | 41.402 | 41.447 |
| 400 | 0.448 | 0.447 | 50.931 | 50.987 |

1. **Belimbing Wuluh : Temulawak ( 3 : 1 )**

* **Ke – 1**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* **Ke – 2**

1. Konsentrasi 200 ppm :

1. Konsentrasi 400 ppm :

1. Konsentrasi 600 ppm :

1. Konsentrasi 800 ppm :

IC50 =

* Aktivitas Antioksidan Belimbing wuluh IC50 =

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Belimbing wuluh** | | | | | |
| **n** | **Konsentrasi (x)** | **Antioksidan (y)** | **x2** | **y2** | **xy** |
| 1 | 9.75 | 387.64 | 95.0625 | 150264.77 | 3779.49 |
| 2 | 13 | 383.35 | 169 | 146957.22 | 4983.55 |
| 3 | 19.5 | 378.1 | 380.25 | 142959.61 | 7372.95 |
| 4 | 26 | 369.12 | 676 | 136249.57 | 9597.12 |
| 5 | 29.25 | 342.34 | 855.5625 | 117196.68 | 10013.445 |
| **Σ = 5** | **Σ = 97.5** | **Σ = 1860.55** | **Σ 2175.875** | **Σ 693627.85** | **Σ 35746.555** |

= = 410.0392

b = = = -1.945088

= 0.89448

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Temulawak** | | | | | |
| **n** | **Konsentrasi (x)** | **Antioksidan (y)** | **x2** | **y2** | **xy** |
| 1 | 29.25 | 387.64 | 855.5625 | 150264.77 | 11338.47 |
| 2 | 26 | 383.35 | 676 | 146957.22 | 9967.1 |
| 3 | 19.5 | 378.1 | 380.25 | 142959.61 | 7372.95 |
| 4 | 13 | 369.12 | 169 | 136249.57 | 4798.56 |
| 5 | 9.75 | 342.34 | 95.0625 | 117196.68 | 3337.815 |
| **Σ= 5** | **Σ = 97.5** | **Σ = 1860.55** | **Σ 2175.875** | **Σ 693627.85** | **Σ 36814.895** |

= = 334.18

b = = = 1.9451

= 0.8944

**Lampiran 14. Hasil Analisis pH Minuman Fungsional Tahap III**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Belimbing wuluh** | | | | | |
| **n** | **Konsentrasi (x)** | **ph (y)** | **x2** | **y2** | **xy** |
| 1 | 9.75 | 2.1 | 95.0625 | 4.41 | 20.475 |
| 2 | 13 | 2.05 | 169 | 4.2025 | 26.65 |
| 3 | 19.5 | 1.53 | 380.25 | 2.3409 | 29.835 |
| 4 | 26 | 1.27 | 676 | 1.6129 | 33.02 |
| 5 | 29.25 | 1.24 | 855.5625 | 1.5376 | 36.27 |
| **Σ = 5** | **Σ = 97.5** | **8.19** | **2175.875** | **14.1039** | **146.25** |

= = 2.593384

b = = = -0.048994

= -0.978374

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Temulawak** | | | | | |
| **n** | **Konsentrasi (x)** | **ph (y)** | **x2** | **y2** | **xy** |
| 1 | 29.25 | 2.1 | 855.5625 | 4.41 | 61.425 |
| 2 | 26 | 2.05 | 676 | 4.2025 | 53.3 |
| 3 | 19.5 | 1.53 | 380.25 | 2.3409 | 29.835 |
| 4 | 13 | 1.27 | 169 | 1.6129 | 16.51 |
| 5 | 9.75 | 1.24 | 95.0625 | 1.5376 | 12.09 |
| **Σ = 5** | **Σ = 97.5** | **8.19** | **2175.875** | **14.1039** | **173.16** |

= = 0.6826

b = = = 0.049

= 0.97837

**Lampiran 14. Data Hasil Penelitian Organoleptik Tahap III**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panelis** | **Sampel** | | | | | | | | | | | | | | |
| **213** | | | **321** | | | **123** | | | **432** | | | **231** | | |
| **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** | **Warna** | **Aroma** | **Rasa** |
| 1 | 4 | 3 | 4 | 4 | 4 | 5 | 3 | 5 | 5 | 3 | 4 | 3 | 5 | 2 | 2 |
| 2 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 6 | 5 | 5 |
| 3 | 3 | 4 | 3 | 3 | 2 | 1 | 3 | 4 | 1 | 4 | 2 | 1 | 3 | 2 | 1 |
| 4 | 4 | 5 | 5 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 1 | 3 | 2 | 1 |
| 5 | 5 | 4 | 3 | 5 | 4 | 3 | 5 | 4 | 4 | 5 | 4 | 2 | 5 | 4 | 2 |
| 6 | 5 | 3 | 2 | 5 | 3 | 2 | 5 | 2 | 3 | 5 | 4 | 1 | 5 | 4 | 1 |
| 7 | 5 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 |
| 8 | 5 | 4 | 2 | 5 | 4 | 2 | 5 | 3 | 3 | 5 | 5 | 4 | 5 | 5 | 4 |
| 9 | 5 | 3 | 2 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 |
| 10 | 4 | 5 | 4 | 5 | 5 | 6 | 5 | 6 | 6 | 3 | 5 | 2 | 2 | 2 | 2 |
| 11 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 2 | 5 | 5 | 5 | 6 | 6 | 6 |
| 12 | 2 | 2 | 3 | 4 | 5 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 |
| 13 | 3 | 3 | 2 | 5 | 5 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 3 |
| 14 | 4 | 2 | 1 | 3 | 1 | 2 | 4 | 5 | 2 | 5 | 3 | 1 | 6 | 3 | 1 |
| 15 | 2 | 1 | 1 | 3 | 2 | 2 | 5 | 5 | 2 | 6 | 4 | 1 | 5 | 4 | 1 |
| 16 | 2 | 3 | 3 | 4 | 4 | 5 | 2 | 4 | 5 | 5 | 2 | 2 | 5 | 4 | 4 |
| 17 | 1 | 4 | 2 | 5 | 5 | 5 | 2 | 4 | 5 | 4 | 1 | 2 | 4 | 4 | 4 |
| 18 | 5 | 3 | 5 | 6 | 5 | 6 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 6 |
| 19 | 5 | 4 | 6 | 5 | 6 | 6 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 6 |
| 20 | 4 | 3 | 3 | 4 | 4 | 5 | 3 | 3 | 4 | 4 | 3 | 2 | 4 | 5 | 2 |
| 21 | 3 | 2 | 3 | 4 | 4 | 5 | 4 | 3 | 5 | 3 | 3 | 2 | 3 | 5 | 2 |
| 22 | 4 | 4 | 3 | 5 | 4 | 4 | 3 | 5 | 4 | 3 | 3 | 4 | 2 | 3 | 5 |
| 23 | 5 | 3 | 4 | 5 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 3 | 4 |
| 24 | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 5 | 2 | 5 | 5 | 5 |
| 25 | 4 | 2 | 2 | 5 | 3 | 4 | 5 | 5 | 4 | 6 | 4 | 3 | 4 | 4 | 1 |
| 26 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 3 | 4 | 5 | 5 |
| 27 | 4 | 5 | 4 | 4 | 4 | 3 | 5 | 4 | 3 | 5 | 3 | 4 | 4 | 5 | 5 |
| 28 | 4 | 2 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 |
| 29 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 |
| 30 | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 4 | 5 | 6 | 4 | 2 | 5 | 4 | 3 |
| **Jumlah** | **116** | **99** | **95** | **131** | **119** | **116** | **121** | **121** | **112** | **134** | **113** | **89** | **127** | **119** | **99** |
| **Rata-rata** | **3.87** | **3.30** | **3.17** | **4.37** | **3.97** | **3.87** | **4.03** | **4.03** | **3.73** | **4.47** | **3.77** | **2.97** | **4.23** | **3.97** | **3.30** |

14.1. Perhitungan Warna

Ulangan 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Panelis | Kode sampel | | | | | | | | | | Jumlah | | Rata-rata | |
| a1 | | a2 | | a3 | | a4 | | a5 | |
| DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| 1 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 5 | 2.35 | 19 | 10.33 | 3.80 | 2.07 |
| 2 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 26 | 11.93 | 5.20 | 2.39 |
| 3 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 16 | 9.60 | 3.20 | 1.92 |
| 4 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 17 | 9.86 | 3.40 | 1.97 |
| 5 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 25 | 11.73 | 5.00 | 2.35 |
| 6 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 25 | 11.73 | 5.00 | 2.35 |
| 7 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 24 | 11.50 | 4.80 | 2.30 |
| 8 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 25 | 11.73 | 5.00 | 2.35 |
| 9 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 25 | 11.73 | 5.00 | 2.35 |
| 10 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 3 | 1.87 | 2 | 1.58 | 19 | 10.26 | 3.80 | 2.05 |
| 11 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 24 | 11.48 | 4.80 | 2.30 |
| 12 | 2 | 1.58 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 4 | 2.12 | 17 | 9.82 | 3.40 | 1.96 |
| 13 | 3 | 1.87 | 5 | 2.35 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 18 | 10.08 | 3.60 | 2.02 |
| 14 | 4 | 2.12 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 22 | 11.01 | 4.40 | 2.20 |
| 15 | 2 | 1.58 | 3 | 1.87 | 5 | 2.35 | 6 | 2.55 | 5 | 2.35 | 21 | 10.69 | 4.20 | 2.14 |
| 16 | 2 | 1.58 | 4 | 2.12 | 2 | 1.58 | 5 | 2.35 | 5 | 2.35 | 18 | 9.97 | 3.60 | 1.99 |
| 17 | 1 | 1.22 | 5 | 2.35 | 2 | 1.58 | 4 | 2.12 | 4 | 2.12 | 16 | 9.39 | 3.20 | 1.88 |
| 18 | 5 | 2.35 | 6 | 2.55 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 21 | 10.76 | 4.20 | 2.15 |
| 19 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 23 | 11.28 | 4.60 | 2.26 |
| 20 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 19 | 10.36 | 3.80 | 2.07 |
| 21 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 17 | 9.86 | 3.40 | 1.97 |
| 22 | 4 | 2.12 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 2 | 1.58 | 17 | 9.79 | 3.40 | 1.96 |
| 23 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 21 | 10.80 | 4.20 | 2.16 |
| 24 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 5 | 2.35 | 23 | 11.23 | 4.60 | 2.25 |
| 25 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 4 | 2.12 | 24 | 11.48 | 4.80 | 2.30 |
| 26 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 22 | 11.05 | 4.40 | 2.21 |
| 27 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 22 | 11.05 | 4.40 | 2.21 |
| 28 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 21 | 10.83 | 4.20 | 2.17 |
| 29 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 16 | 9.60 | 3.20 | 1.92 |
| 30 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 5 | 2.35 | 26 | 11.93 | 5.20 | 2.39 |
| **Jumlah** | 116 | 62.11 | 131 | 65.95 | 121 | 63.47 | 134 | 66.54 | 127 | 64.80 | 629.00 | 322.86 | 125.80 | 64.57 |
| **Rata-rata** | 3.87 | 2.07 | 4.37 | 2.20 | 4.03 | 2.12 | 4.47 | 2.22 | 4.23 | 2.16 | 20.97 | 10.76 | 4.19 | 2.15 |

Tabel 28. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Warna Minuman Fungsional

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | | | **Jumlah** |
| **a1** | **a2** | **a3** | **a4** | **a5** |
| I | 2.19 | 2.15 | 2.11 | 2.19 | 2.22 | 10.86 |
| II | 2.14 | 2.27 | 2.27 | 2.19 | 2.21 | 11.09 |
| III | 1.79 | 2.18 | 1.90 | 2.23 | 2.23 | 10.32 |
| IV | 2.11 | 2.23 | 2.08 | 2.11 | 2.02 | 10.55 |
| V | 2.12 | 2.15 | 2.23 | 2.38 | 2.12 | 10.99 |
| **Jumlah** | 10.35 | 10.99 | 10.58 | 11.09 | 10.80 | **53.81** |
| **Rata-rata** | 2.07 | 2.20 | 2.12 | 2.22 | 2.16 | 10.76 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 29. Analisis Variansi (ANAVA) Atribut Warna Minuman

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber keragaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.08197 | 0.02049 | 1.72tn | 3.01 |
| Perlakuan | 4 | 0.07278 | 0.01819 |  |  |
| Galat | 16 | 0.19047 | 0.0119 |  |  |
| Total | 24 | 0.3452 |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung < F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak tidak berpengaruh nyata terhadap atribut warna, maka kita memutuskan tidak menerima Ho dan tidak perlu dilakukan uji lanjut duncan.

14.2. Perhitungan Aroma

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Panelis | Kode sampel | | | | | | | | | | Jumlah | | Rata-rata | |
| 365 | | 133 | | 284 | |  | |  | |
| DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| 1 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 2 | 1.58 | 18 | 10.04 | 3.60 | 2.01 |
| 2 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 22 | 11.05 | 4.40 | 2.21 |
| 3 | 4 | 2.12 | 2 | 1.58 | 4 | 2.12 | 2 | 1.58 | 2 | 1.58 | 14 | 8.99 | 2.80 | 1.80 |
| 4 | 5 | 2.35 | 2 | 1.58 | 3 | 1.87 | 4 | 2.12 | 2 | 1.58 | 16 | 9.50 | 3.20 | 1.90 |
| 5 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 20 | 10.61 | 4.00 | 2.12 |
| 6 | 3 | 1.87 | 3 | 1.87 | 2 | 1.58 | 4 | 2.12 | 4 | 2.12 | 16 | 9.57 | 3.20 | 1.91 |
| 7 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 23 | 11.25 | 4.60 | 2.25 |
| 8 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 21 | 10.80 | 4.20 | 2.16 |
| 9 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 21 | 10.80 | 4.20 | 2.16 |
| 10 | 5 | 2.35 | 5 | 2.35 | 6 | 2.55 | 5 | 2.35 | 2 | 1.58 | 23 | 11.17 | 4.60 | 2.23 |
| 11 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 24 | 11.48 | 4.80 | 2.30 |
| 12 | 2 | 1.58 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 16 | 9.54 | 3.20 | 1.91 |
| 13 | 3 | 1.87 | 5 | 2.35 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 19 | 10.33 | 3.80 | 2.07 |
| 14 | 2 | 1.58 | 1 | 1.22 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 14 | 8.89 | 2.80 | 1.78 |
| 15 | 1 | 1.22 | 2 | 1.58 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 16 | 9.39 | 3.20 | 1.88 |
| 16 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 2 | 1.58 | 4 | 2.12 | 17 | 9.82 | 3.40 | 1.96 |
| 17 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 1 | 1.22 | 4 | 2.12 | 18 | 9.93 | 3.60 | 1.99 |
| 18 | 3 | 1.87 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 20 | 10.58 | 4.00 | 2.12 |
| 19 | 4 | 2.12 | 6 | 2.55 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 25 | 11.71 | 5.00 | 2.34 |
| 20 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 5 | 2.35 | 18 | 10.08 | 3.60 | 2.02 |
| 21 | 2 | 1.58 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 5 | 2.35 | 17 | 9.79 | 3.40 | 1.96 |
| 22 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 19 | 10.33 | 3.80 | 2.07 |
| 23 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 16 | 9.60 | 3.20 | 1.92 |
| 24 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 5 | 2.35 | 22 | 11.03 | 4.40 | 2.21 |
| 25 | 2 | 1.58 | 3 | 1.87 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 18 | 10.04 | 3.60 | 2.01 |
| 26 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 21 | 10.83 | 4.20 | 2.17 |
| 27 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 5 | 2.35 | 21 | 10.80 | 4.20 | 2.16 |
| 28 | 2 | 1.58 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 19 | 10.29 | 3.80 | 2.06 |
| 29 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 16 | 9.60 | 3.20 | 1.92 |
| 30 | 4 | 2.12 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 21 | 10.83 | 4.20 | 2.17 |
| Jumlah | 99 | 57.96 | 119 | 62.81 | 121 | 63.57 | 113 | 61.45 | 119 | 62.89 | 571 | 308.68 | 114.20 | 61.74 |
| Rata-rata | 3.30 | 1.93 | 4.0 | 2.09 | 4.03 | 2.12 | 3.77 | 2.05 | 3.97 | 2.10 | 19.03 | 10.29 | 3.81 | 2.06 |

Tabel 30. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Aroma Minuman Fungsional.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | | | **Jumlah** |
| **a1** | **a2** | **a3** | **a4** | **a5** |
| I | 2.08 | 1.90 | 2.03 | 2.07 | 1.89 | 9.96 |
| II | 1.99 | 2.27 | 2.15 | 2.27 | 2.17 | 10.84 |
| III | 1.76 | 1.99 | 2.15 | 1.84 | 2.08 | 9.82 |
| IV | 1.91 | 2.15 | 2.15 | 2.03 | 2.19 | 10.42 |
| V | 1.94 | 2.15 | 2.12 | 2.04 | 2.15 | 10.40 |
| **Jumlah** | 9.66 | 10.47 | 10.59 | 10.24 | 10.48 | **51.45** |
| **Rata-rata** | 1.93 | 2.09 | 2.12 | 2.05 | 2.10 | 10.29 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 31. Analisis Variansi (ANAVA) Atribut Aroma Minuman.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber keragaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.13204 | 0.033 | 3.06\* | 3.01 |
| Perlakuan | 4 | 0.1122 | 0.0281 |  |  |
| Galat | 16 | 0.1726 | 0.0108 |  |  |
| Total | 24 | 0.4169 |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung > F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak berpengaruh nyata terhadap atribut aroma, maka kita memutuskan menerima Ho, sehingga dilakukan uji lanjut duncan.

Tabel 32. Uji Lanjut Duncan Atribut Aroma.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Kode sampel | Rata-rata | Perlakuan | | | | | Taraf Nyata 5% |
| 1 | 2 | 3 | 4 | 5 |
|  |  | a1 | 1.93 | - |  |  |  |  | a |
| 3.00 | 0.1394 | a4 | 2.05 | 0.116tn | - |  |  |  | ab |
| 3.15 | 0.1463 | a2 | 2.09 | 0.162\* | 0.045tn | - |  |  | b |
| 3.23 | 0.1501 | a5 | 2.10 | 0.165\* | 0.048tn | 0.003tn | - |  | b |
| 3.30 | 0.1533 | a3 | 2.12 | 0.188\* | 0.072tn | 0.026tn | 0.024tn | - | b |

Keterangan : (\*) = Berbeda nyata

(tn) = Tidak berbeda nyata

Tabel 33. Pengaruh Perbandingan Sari Belimbing Wuluh dan Sari Temulawak Terhadap Atribut Warna Minuman Fungsional.

|  |  |  |
| --- | --- | --- |
| Perbandingan  (sari belimbing wuluh : sari temulawak) | Nilai  Rata-rata | Taraf 5% |
| a1 (9,75% : 29,25) | 3.30 | a |
| a2 (13% : 26%) | 3.97 | b |
| a3 (19,5% : 19,5%) | 4.03 | b |
| a4 (26% : 13%) | 3.73 | ab |
| a5 (29,25% : 9,75%) | 3.97 | b |

Keterangan : Nilai rata-rata yang ditandai dengan huruf yang sama menunjukkan tidak pengaruh pada taraf 5% menurut uji lanjut Duncan.

Kesimpulan :

Berdasarkan tabel 31 uji lanjut Duncan, bahwa perlakuan a1 tidak berbeda nyata dengan a4 tetapi berbeda nyata dengan a2, a3 dan a5. Sedangkan perlakuan a4 tidak berbeda nyata dengan a2, a3 dan a5 tetapi berbeda nyata dengan a1.

14.3. Perhitungan Rasa

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Panelis | Kode sampel | | | | | | | | | | Jumlah | | Rata-rata | |
| 365 | | 133 | | 284 | |  | |  | |
| DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| 1 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 3 | 1.87 | 2 | 1.58 | 19 | 10.26 | 3.80 | 2.05 |
| 2 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 22 | 11.05 | 4.40 | 2.21 |
| 3 | 3 | 1.87 | 1 | 1.22 | 1 | 1.22 | 1 | 1.22 | 1 | 1.22 | 7 | 6.77 | 1.40 | 1.35 |
| 4 | 5 | 2.35 | 3 | 1.87 | 3 | 1.87 | 1 | 1.22 | 1 | 1.22 | 13 | 8.54 | 2.60 | 1.71 |
| 5 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 2 | 1.58 | 2 | 1.58 | 14 | 9.03 | 2.80 | 1.81 |
| 6 | 2 | 1.58 | 2 | 1.58 | 3 | 1.87 | 1 | 1.22 | 1 | 1.22 | 9 | 7.48 | 1.80 | 1.50 |
| 7 | 4 | 2.12 | 5 | 2.35 | 5 | 2.35 | 4 | 2.12 | 4 | 2.12 | 22 | 11.05 | 4.40 | 2.21 |
| 8 | 2 | 1.58 | 2 | 1.58 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 15 | 9.28 | 3.00 | 1.86 |
| 9 | 2 | 1.58 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 18 | 10.07 | 3.60 | 2.01 |
| 10 | 4 | 2.12 | 6 | 2.55 | 6 | 2.55 | 2 | 1.58 | 2 | 1.58 | 20 | 10.38 | 4.00 | 2.08 |
| 11 | 4 | 2.12 | 4 | 2.12 | 2 | 1.58 | 5 | 2.35 | 6 | 2.55 | 21 | 10.72 | 4.20 | 2.14 |
| 12 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 16 | 9.60 | 3.20 | 1.92 |
| 13 | 2 | 1.58 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 3 | 1.87 | 15 | 9.31 | 3.00 | 1.86 |
| 14 | 1 | 1.22 | 2 | 1.58 | 2 | 1.58 | 1 | 1.22 | 1 | 1.22 | 7 | 6.84 | 1.40 | 1.37 |
| 15 | 1 | 1.22 | 2 | 1.58 | 2 | 1.58 | 1 | 1.22 | 1 | 1.22 | 7 | 6.84 | 1.40 | 1.37 |
| 16 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 2 | 1.58 | 4 | 2.12 | 19 | 10.26 | 3.80 | 2.05 |
| 17 | 2 | 1.58 | 5 | 2.35 | 5 | 2.35 | 2 | 1.58 | 4 | 2.12 | 18 | 9.97 | 3.60 | 1.99 |
| 18 | 5 | 2.35 | 6 | 2.55 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 26 | 11.91 | 5.20 | 2.38 |
| 19 | 6 | 2.55 | 6 | 2.55 | 4 | 2.12 | 5 | 2.35 | 6 | 2.55 | 27 | 12.12 | 5.40 | 2.42 |
| 20 | 3 | 1.87 | 5 | 2.35 | 4 | 2.12 | 2 | 1.58 | 2 | 1.58 | 16 | 9.50 | 3.20 | 1.90 |
| 21 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 2 | 1.58 | 2 | 1.58 | 17 | 9.72 | 3.40 | 1.94 |
| 22 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 5 | 2.35 | 20 | 10.58 | 4.00 | 2.12 |
| 23 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 19 | 10.36 | 3.80 | 2.07 |
| 24 | 3 | 1.87 | 5 | 2.35 | 5 | 2.35 | 2 | 1.58 | 5 | 2.35 | 20 | 10.49 | 4.00 | 2.10 |
| 25 | 2 | 1.58 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 1 | 1.22 | 14 | 8.92 | 2.80 | 1.78 |
| 26 | 3 | 1.87 | 4 | 2.12 | 4 | 2.12 | 3 | 1.87 | 5 | 2.35 | 19 | 10.33 | 3.80 | 2.07 |
| 27 | 4 | 2.12 | 3 | 1.87 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 19 | 10.33 | 3.80 | 2.07 |
| 28 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 4 | 2.12 | 20 | 10.61 | 4.00 | 2.12 |
| 29 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 3 | 1.87 | 15 | 9.35 | 3.00 | 1.87 |
| 30 | 3 | 1.87 | 4 | 2.12 | 5 | 2.35 | 2 | 1.58 | 3 | 1.87 | 17 | 9.79 | 3.40 | 1.96 |
| jumlah | 95.00 | 56.73 | 116.0 | 61.93 | 112.00 | 61.11 | 89.00 | 54.73 | 99.00 | 56.96 | 511.00 | 291.46 | 102.20 | 58.29 |
| rata-rata | 3.17 | 1.89 | 3.9 | 2.06 | 3.73 | 2.04 | 2.97 | 1.82 | 3.30 | 1.90 | 17.03 | 9.72 | 3.41 | 1.94 |

Tabel 34. Perhitungan Hasil Pengamatan Uji Organoleptik Atribut Rasa Minuman Fungsional

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Ulangan** | **Kode Sampel** | | | | | **Jumlah** |
| **a1** | **a2** | **a3** | **a4** | **a5** |
| I | 1.99 | 1.84 | 1.93 | 1.58 | 1.53 | 8.86 |
| II | 1.90 | 2.10 | 2.06 | 2.07 | 2.06 | 10.18 |
| III | 1.64 | 2.05 | 1.97 | 1.68 | 1.85 | 9.19 |
| IV | 2.03 | 2.30 | 2.15 | 1.89 | 2.09 | 10.46 |
| V | 1.91 | 2.04 | 2.08 | 1.91 | 1.96 | 9.89 |
| **Jumlah** | 9.45 | 10.32 | 10.19 | 9.12 | 9.49 | **48.58** |
| **Rata-rata** | 1.89 | 2.06 | 2.04 | 1.82 | 1.90 | 9.72 |

FK =

JKK = () – FK

JKP = () – FK

JKG = JKT – JKP – JKS

KTK =

KTP =

KTG =

FHitung =

Sy =

Tabel 35. Analisis Variansi (ANAVA) Atribut Rasa Minuman.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber keraagaman** | **Db** | **JK** | **KT** | **F hitung** | **F tabel 5%** |
| Kelompok | 4 | 0.36408 | 0.091 | 6.41\* | 3.01 |
| Perlakuan | 4 | 0.21181 | 0.053 |  |  |
| Galat | 16 | 0.22707 | 0.0142 |  |  |
| Total | 24 | 0.80296 |  |  |  |

Keterangan : (\*) = Berpengaruh

(tn) = Tidak Berpengaruh

Kesimpulan :

Berdasarkan tabel ANAVA diketahui bahwa F hitung > F tabel 5% maka dapat disimpulkan bahwa perbandingan sari belimbing wuluh dan sari temulawak berpengaruh nyata terhadap atribut warna, maka kita memutuskan menerima Ho, sehingga dilakukan uji lanjut duncan.

Tabel 36. Uji Lanjut Duncan Atribut Rasa.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Kode sampel | Rata-rata | Perlakuan | | | | | Taraf nyata 5% |
| 1 | 2 | 3 | 4 | 5 |  |
|  |  | a4 | 1.82 |  |  |  |  |  | a |
| 3.00 | 0.1598 | a1 | 1.89 | 0.070tn |  |  |  |  | ab |
| 3.15 | 0.1678 | a5 | 1.90 | 0.080tn | 0.010tn |  |  |  | ab |
| 3.23 | 0.1721 | a3 | 2.04 | 0.220\* | 0.150tn | 0.140tn |  |  | b |
| 3.30 | 0.1758 | a2 | 2.06 | 0.240\* | 0.170tn | 0.160tn | 0.020tn |  | b |

Keterangan : (\*) = Berbeda nyata

(tn) = Tidak berbeda nyata

Tabel 37. Pengaruh Perbandingan Sari Belimbing Wuluh dan Sari Temulawak Terhadap Atribut Rasa Minuman Fungsional

|  |  |  |
| --- | --- | --- |
| Perbandingan  (sari belimbing wuluh : sari temulawak) | Nilai  Rata-rata | Taraf 5% |
| a1 (9,75% : 29,25) | 3.17 | ab |
| a2 (13% : 26%) | 3.87 | b |
| a3 (19,5% : 19,5%) | 3.73 | b |
| a4 (26% : 13%) | 2.97 | a |
| a5 (29,25% : 9,75%) | 3.30 | ab |

Kesimpulan :

Berdasarkan tabel 37 uji lanjut Duncan, bahwa perlakuan a4 tidak berbeda nyata dengan perlakuan a1 dan a5 tetapi berbeda nyata dengan perlakuan a3 dan a2. Sedangkan perlakuan a1 tidak berbeda nyata dengan a5, a3 dan a2 tetapi berbeda nyata dengan perlakuan a4.