**Lampiran 1. Penelitian Pendahuluan Uji Organoleptik**

**FORMULIR UJI ORGANOLEPTIK**

**UJI HEDONIK**

Sample : Minuman fungsional sari daun jambu biji dengan sari salak

Nama Panelis :

Tanggal :

Pekerjaan :

Paraf :

Berikan penilaian saudara terhadap warna, rasa, dan aroma pada setiap sampel Minuman fungsional sari daun jambu biji dengan sari salak bongkok dengan nilai :

Tabel 17. Skala Hedonik

|  |  |
| --- | --- |
| **Skala Hedonik** | **Skala Numerik** |
| Sangat Disukai | 5 |
| Disukai | 4 |
| Biasa | 3 |
| Tidak Disukai | 2 |
| Sangat Tidak Disukai | 1 |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Kode | Warna | Rasa | Aroma |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Tabel 18. Data Asli Minuman Fungsional Terhadap Atribut Warna

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA ASLI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2  756 | c1d3  262 | c2d1  332 | c2d2  613 | c2d3  131 | c3d1  951 | c3d2  573 | c3d3  842 | Jumlah | Rata-rata |
| 1 | 3 | 2 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 27 | 3.00 |
| 2 | 2 | 4 | 4 | 4 | 4 | 5 | 3 | 4 | 4 | 34 | 3.78 |
| 3 | 5 | 4 | 4 | 3 | 5 | 3 | 5 | 4 | 5 | 38 | 4.22 |
| 4 | 3 | 4 | 4 | 3 | 3 | 2 | 3 | 3 | 4 | 29 | 3.22 |
| 5 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 32 | 3.56 |
| 6 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 29 | 3.22 |
| 7 | 4 | 2 | 4 | 5 | 2 | 4 | 4 | 5 | 4 | 34 | 3.78 |
| 8 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 31 | 3.44 |
| 9 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 32 | 3.56 |
| 10 | 2 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 29 | 3.22 |
| 11 | 3 | 3 | 4 | 3 | 4 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 12 | 4 | 3 | 3 | 3 | 4 | 5 | 3 | 3 | 3 | 31 | 3.44 |
| 13 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 32 | 3.56 |
| 14 | 3 | 4 | 3 | 4 | 3 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 15 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 32 | 3.56 |
| Jumlah | 48 | 48 | 53 | 50 | 54 | 60 | 54 | 53 | 54 | 474 | 52.67 |
| Rata-Rata | 3.20 | 3.20 | 3.53 | 3.33 | 3.60 | 4.00 | 3.60 | 3.53 | 3.60 | 31.60 | 3.51 |

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

Tabel 19. Data Transformasi Minuman Fungsional Terhadap Atribut Warna

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA TRANSFORMASI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2  756 | c1d3 262 | c2d1 332 | c2d2 613 | c2d3 131 | c3d1 951 | c3d2 573 | c3d3 842 | Jumlah | Rata-rata |
| 1 | 1.87 | 1.58 | 1.87 | 1.87 | 2.12 | 1.87 | 2.12 | 1.87 | 1.58 | 16.76 | 1.86 |
| 2 | 1.58 | 2.12 | 2.12 | 2.12 | 2.12 | 2.35 | 1.87 | 2.12 | 2.12 | 18.53 | 2.06 |
| 3 | 2.35 | 2.12 | 2.12 | 1.87 | 2.35 | 1.87 | 2.35 | 2.12 | 2.35 | 19.49 | 2.17 |
| 4 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 1.58 | 1.87 | 1.87 | 2.12 | 17.30 | 1.92 |
| 5 | 1.87 | 1.87 | 1.87 | 2.12 | 2.12 | 2.12 | 1.87 | 2.12 | 2.12 | 18.09 | 2.01 |
| 6 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 1.87 | 2.12 | 1.87 | 17.34 | 1.93 |
| 7 | 2.12 | 1.58 | 2.12 | 2.35 | 1.58 | 2.12 | 2.12 | 2.35 | 2.12 | 18.46 | 2.05 |
| 8 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 2.12 | 1.87 | 1.87 | 2.12 | 17.84 | 1.98 |
| 9 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 2.12 | 2.12 | 18.06 | 2.01 |
| 10 | 1.58 | 1.58 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 2.12 | 17.26 | 1.92 |
| 11 | 1.87 | 1.87 | 2.12 | 1.87 | 2.12 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 12 | 2.12 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 1.87 | 1.87 | 1.87 | 17.81 | 1.98 |
| 13 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.12 | 2.12 | 2.12 | 2.12 | 18.09 | 2.01 |
| 14 | 1.87 | 2.12 | 1.87 | 2.12 | 1.87 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 15 | 2.12 | 2.12 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 1.87 | 18.09 | 2.01 |
| Jumlah | 28.71 | 28.70 | 30.07 | 29.29 | 30.25 | 31.67 | 30.26 | 30.04 | 30.25 | 269.24 | 29.92 |
| Rata-Rata | 1.91 | 1.91 | 2.00 | 1.95 | 2.02 | 2.11 | 2.02 | 2.00 | 2.02 | 15.93 | 1.99 |

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

**Perhitungan Anava:**

* Faktor Koreksi (FK) = = = 536,96
* db sampel = banyaknya sampel – 1 = 9-1 = 8
* db panelis = banyaknya panelis – 1 = 15-1 = 14
* db galat = db sampel X db panelis = 8 X 14 = 112
* JK sampel = -536,96 = 0,45
* JK panelis = -536,96 = 0,64
* JK total = (((1.87)2X61)+((1.58) 2X8)+((2.35) 2X11)+((2.12)2X55))- 536,96

= 4,26

* JK galat = 4,26 - 0,64 - 0,45 = 3,16

Tabel 20. Analisis Variansi (ANAVA) Minuman Fungsional Terhadap Atribut Warna

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **Derajat Bebas (db)** | **Jumlah Kuadrat (JK)** | **Rata-rata Jumlah Kuadrat (RJK)** | **F Hitung** | **F Tabel** |
| **5%** |
| **Sampel** | 8 | 0.45 | 0.06 | 2.01 tn | 2.03 |
| **Panelis** | 14 | 0.64 | 0.05 | 1.62 |  |
| **Galat** | 112 | 3.16 | 0.03 |  |  |
| **Total** | 134 | 4.26 |  |  |  |

Kesimpulan:

Berdasarkan hasil pengamatan uji organoleptik Minuman fungsional dengan atribut warna, diketahui bahwa F hitung < F table pada taraf 5% antara setiap perlakuan sampel kode 512, 756, 262, 332, 613, 131, 951, 573 dan 842 maka perlakuan tidak berpengaruh nyata terhadap warna Minuman Fungsional, sehingga tidak dilakukan uji jarak berganda Duncan pada taraf 5%.

Tabel 21. Data Asli Minuman Fungsional Terhadap Atribut Aroma

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA ASLI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2 756 | c1d3 262 | c2d1 332 | c2d2 613 | c2d3 131 | c3d1 951 | c3d2 573 | c3d3 842 | Jumlah | Rata-rata |
| 1 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 32 | 3.56 |
| 2 | 2 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 29 | 3.22 |
| 3 | 3 | 3 | 4 | 3 | 4 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 4 | 4 | 3 | 3 | 4 | 2 | 2 | 4 | 4 | 3 | 29 | 3.22 |
| 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 37 | 4.11 |
| 6 | 2 | 2 | 2 | 4 | 2 | 4 | 3 | 4 | 3 | 26 | 2.89 |
| 7 | 2 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 31 | 3.44 |
| 8 | 4 | 3 | 3 | 3 | 4 | 5 | 3 | 3 | 3 | 31 | 3.44 |
| 9 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 32 | 3.56 |
| 10 | 3 | 4 | 3 | 4 | 3 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 11 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 32 | 3.56 |
| 12 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 30 | 3.33 |
| 13 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 33 | 3.67 |
| 14 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 33 | 3.67 |
| 15 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 31 | 3.44 |
| Jumlah | 48 | 50 | 52 | 53 | 52 | 58 | 55 | 52 | 50 | 470 | 52.22 |
| Rata-Rata | 3.20 | 3.33 | 3.47 | 3.53 | 3.47 | 3.87 | 3.67 | 3.47 | 3.33 | 31.33 | 3.48 |

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

Tabel 22.Data Transformasi Minuman Fungsional Terhadap Atribut Aroma

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA TRANSFORMASI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2 756 | c1d3 262 | c2d1 332 | c2d2 613 | c2d3 131 | c3d1 951 | c3d2 573 | c3d3 842 | Jumlah | Rata-rata |
| 1 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 2.12 | 2.12 | 18.06 | 2.01 |
| 2 | 1.58 | 1.58 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 2.12 | 17.26 | 1.92 |
| 3 | 1.87 | 1.87 | 2.12 | 1.87 | 2.12 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 4 | 2.12 | 1.87 | 1.87 | 2.12 | 1.58 | 1.58 | 2.12 | 2.12 | 1.87 | 17.26 | 1.92 |
| 5 | 2.12 | 2.12 | 2.12 | 2.12 | 2.35 | 2.12 | 2.12 | 2.12 | 2.12 | 19.32 | 2.15 |
| 6 | 1.58 | 1.58 | 1.58 | 2.12 | 1.58 | 2.12 | 1.87 | 2.12 | 1.87 | 16.43 | 1.83 |
| 7 | 1.58 | 2.12 | 1.87 | 2.12 | 2.12 | 2.12 | 1.87 | 2.12 | 1.87 | 17.80 | 1.98 |
| 8 | 2.12 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 1.87 | 1.87 | 1.87 | 17.81 | 1.98 |
| 9 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.12 | 2.12 | 2.12 | 2.12 | 18.09 | 2.01 |
| 10 | 1.87 | 2.12 | 1.87 | 2.12 | 1.87 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 11 | 2.12 | 2.12 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 1.87 | 18.09 | 2.01 |
| 12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 17.59 | 1.95 |
| 13 | 2.12 | 2.12 | 2.12 | 2.12 | 1.87 | 1.87 | 2.12 | 2.12 | 1.87 | 18.34 | 2.04 |
| 14 | 2.12 | 2.12 | 2.12 | 2.12 | 2.12 | 1.87 | 2.12 | 1.87 | 1.87 | 18.34 | 2.04 |
| 15 | 1.87 | 1.87 | 2.12 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 17.84 | 1.98 |
| Jumlah | 28.70 | 29.24 | 29.78 | 30.07 | 29.71 | 31.20 | 30.54 | 29.82 | 29.31 | 268.36 | 29.82 |
| Rata-Rata | 1.91 | 1.95 | 1.99 | 2.00 | 1.98 | 2.08 | 2.04 | 1.99 | 1.95 | 15.94 | 1.99 |

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

**Perhitungan Anava:**

* Faktor Koreksi (FK) = = = 533, 45
* db sampel = banyaknya sampel – 1 = 9-1 = 8
* db panelis = banyaknya panelis – 1 = 15-1 = 14
* db galat = db sampel X db panelis = 8 X 14 = 112
* JK sampel = -533, 45= 0,29
* JK panelis = -533, 45= 0,63
* JK total = (((1.872)X 61)+((1.582)X8)+((2.352)X11)+((2.122)X55))-533, 45

= 7,77

* JK galat = 7,77 - 0,63 - 0,29 = 6,85

Tabel 23. Analisis Variansi (ANAVA) Minuman Fungsional Terhadap Atribut Aroma

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **Derajat Bebas (db)** | **Jumlah Kuadrat (JK)** | **Rata-rata Jumlah Kuadrat (RJK)** | **F Hitung** | **F Tabel**  **5%** |
| **Sampel** | 8 | 0.29 | 0.04 | 0.59 tn | 2.03 |
| **Panelis** | 14 | 0.63 | 0.04 | 0.73 |  |
| **Galat** | 112 | 6.85 | 0.06 |  |  |
| **Total** | 134 | 7.77 |  |  |  |

Kesimpulan :

Berdasarkan hasil pengamatan uji organoleptik Minuman fungsional dengan atribut warna, diketahui bahwa F hitung < F table pada taraf 5% antara setiap perlakuan sampel kode 512, 756, 262, 332, 613, 131, 951, 573 dan 842 maka perlakuan tidak berpengaruh nyata terhadap warna Minuman Fungsional, sehingga tidak dilakukan uji jarak berganda Duncan pada taraf 5%.

Tabel 24 . Data Asli Minuman Fungsional Terhadap Atribut Rasa

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA ASLI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2 756 | c1d3 262 | c2d1 332 | c2d2 613 | c2d3 131 | c3d1 951 | c3d2 573 | c3d3 842 | Jumlah | Rata-rata |
| 1 | 2 | 6 | 4 | 4 | 1 | 5 | 3 | 3 | 3 | 31 | 3.44 |
| 2 | 4 | 5 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 40 | 4.44 |
| 3 | 3 | 4 | 3 | 4 | 4 | 2 | 4 | 3 | 4 | 31 | 3.44 |
| 4 | 2 | 2 | 4 | 3 | 3 | 5 | 2 | 2 | 2 | 25 | 2.78 |
| 5 | 5 | 3 | 3 | 4 | 3 | 3 | 2 | 5 | 2 | 30 | 3.33 |
| 6 | 3 | 4 | 3 | 5 | 4 | 2 | 4 | 4 | 3 | 32 | 3.56 |
| 7 | 2 | 2 | 4 | 4 | 3 | 5 | 4 | 4 | 3 | 31 | 3.44 |
| 8 | 4 | 4 | 3 | 3 | 5 | 5 | 3 | 5 | 5 | 37 | 4.11 |
| 9 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 32 | 3.56 |
| 10 | 2 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 29 | 3.22 |
| 11 | 3 | 3 | 4 | 3 | 4 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 12 | 4 | 3 | 3 | 3 | 4 | 5 | 3 | 3 | 3 | 31 | 3.44 |
| 13 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 32 | 3.56 |
| 14 | 3 | 4 | 3 | 4 | 3 | 5 | 4 | 3 | 3 | 32 | 3.56 |
| 15 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 31 | 3.44 |
| Jumlah | 47 | 51 | 53 | 54 | 54 | 62 | 51 | 53 | 51 | 476 | 52.89 |
| Rata-Rata | 3.13 | 3.40 | 3.53 | 3.60 | 3.60 | 4.13 | 3.40 | 3.53 | 3.40 | 31.73 | 3.53 |

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DATA TRANSFORMASI** | | | | | | | | | | | |
|
| Kode Sampel/ Panelis | c1d1 512 | c1d2 756 | c1d3 262 | c2d1 332 | c2d2 613 | c2d3 131 | c3d1 951 | c3d2 573 | c3d3 842 | Jumlah | Rata-rata |
| 1 | 1.58 | 2.55 | 2.12 | 2.12 | 1.22 | 2.35 | 1.87 | 1.87 | 1.87 | 17.56 | 1.95 |
| 2 | 2.12 | 2.35 | 2.35 | 2.35 | 2.35 | 2.12 | 1.87 | 2.12 | 2.35 | 19.96 | 2.22 |
| 3 | 1.87 | 2.12 | 1.87 | 2.12 | 2.12 | 1.58 | 2.12 | 1.87 | 2.12 | 17.80 | 1.98 |
| 4 | 1.58 | 1.58 | 2.12 | 1.87 | 1.87 | 2.35 | 1.58 | 1.58 | 1.58 | 16.11 | 1.79 |
| 5 | 2.35 | 1.87 | 1.87 | 2.12 | 1.87 | 1.87 | 1.58 | 2.35 | 1.58 | 17.46 | 1.94 |
| 6 | 1.87 | 2.12 | 1.87 | 2.35 | 2.12 | 1.58 | 2.12 | 2.12 | 1.87 | 18.02 | 2.00 |
| 7 | 1.58 | 1.58 | 2.12 | 2.12 | 1.87 | 2.35 | 2.12 | 2.12 | 1.87 | 17.73 | 1.97 |
| 8 | 2.12 | 2.12 | 1.87 | 1.87 | 2.35 | 2.35 | 1.87 | 2.35 | 2.35 | 19.24 | 2.14 |
| 9 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 2.12 | 2.12 | 18.06 | 2.01 |
| 10 | 1.58 | 1.58 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 2.12 | 17.26 | 1.92 |
| 11 | 1.87 | 1.87 | 2.12 | 1.87 | 2.12 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 12 | 2.12 | 1.87 | 1.87 | 1.87 | 2.12 | 2.35 | 1.87 | 1.87 | 1.87 | 17.81 | 1.98 |
| 13 | 1.87 | 1.87 | 1.87 | 1.87 | 2.12 | 2.12 | 2.12 | 2.12 | 2.12 | 18.09 | 2.01 |
| 14 | 1.87 | 2.12 | 1.87 | 2.12 | 1.87 | 2.35 | 2.12 | 1.87 | 1.87 | 18.06 | 2.01 |
| 15 | 2.12 | 1.87 | 2.12 | 1.87 | 2.12 | 2.12 | 1.87 | 1.87 | 1.87 | 17.84 | 1.98 |
| Jumlah | 28.38 | 29.35 | 30.04 | 30.26 | 30.12 | 32.06 | 29.46 | 29.97 | 29.43 | 269.07 | 29.90 |
| Rata-Rata | 1.89 | 1.96 | 2.00 | 2.02 | 2.01 | 2.14 | 1.96 | 2.00 | 1.96 | 15.98 | 1.99 |

Tabel 25. Data Transformasi Minuman Fungsional Terhadap Atribut Rasa

**Keterangan :**

c1d1 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 1

c1d2 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 2

c1d3 = sari salak bongkok 1: air 1 dan sari daun jambu 1 : air 3

c2d1 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 1

c2d2 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 2

c2d3 = sari salak bongkok 1: air 2 dan sari daun jambu 1 : air 3

c3d1 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 1

c3d2 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 2

c3d3 = sari salak bongkok 1: air 3 dan sari daun jambu 1 : air 3

**Perhitungan Anava:**

* Faktor Koreksi (FK) = = = 536,3
* db sampel = banyaknya sampel – 1 = 9-1 = 8
* db panelis = banyaknya panelis – 1 = 15-1 = 14
* db galat = db sampel X db panelis = 8 X 14 = 112
* JK sampel = -536,3= 0,53
* JK panelis = -536,3= 1,12
  + - JK total = (((1.872) X 61)+((1.582) X 8)+((2.352) X 11)+((2.122) X 55)) - 536,3 = 4,92
* JK galat = 4,92 – 1,12 - 0,53 = 3,27

Tabel 26. Analisis Variansi (ANAVA) Minuman Fungsional Terhadap Atribut Rasa

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **Derajat Bebas (db)** | **Jumlah Kuadrat (JK)** | **Rata-rata Jumlah Kuadrat (RJK)** | **F Hitung** | **F Tabel** |
| **5%** |
| **Sampel** | 8 | 0.53 | 0.07 | 2.25 \* | 2.03 |
| **Panelis** | 14 | 1.12 | 0.08 | 2.75 |  |
| **Galat** | 112 | 3.27 | 0.03 |  |  |
| **Total** | 134 | 4.92 |  |  |  |

Kesimpulan:

Berdasarkan hasil pengamatan uji organoleptik Minuman Fungsional dengan atribut Rasa, diketahui bahwa F hitung > F tabel pada taraf 5% antara setiap perlakuan sampel dengan Kode 512, 756, 262, 332, 613, 131, 951, 573 dan 842 , maka perlakuan berpengaruh nyata terhadap rasa Minuman Fungsional, sehingga dilakukan uji jarak berganda Duncan pada taraf 5%.

* **Uji Lanjut Duncan Pada Taraf 5% (Atribut Rasa)**

Sỹ = = = 0,04

**Tabel 27. Uji Lanjut Duncan Minuman Fungsional Atribut Rasa**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode Sampel** | **Nilai rata-rata** | **Perlakuan** | | | | | |  |  | **Taraf Nyata 5%** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | 8 |
|  |  | 512 | 1.89 |  |  |  |  |  |  |  |  | a |
| 2.77 | 0.122 | 756 | 1.96 | 0.07 tn |  |  |  |  |  |  |  | a |
| 2.92 | 0.129 | 951 | 1.96 | 0.07 tn | 0.00 tn |  |  |  |  |  |  | a |
| 3.02 | 0.133 | 842 | 1.96 | 0.07 tn | 0.00 tn | 0.00 tn |  |  |  |  |  | a |
| 3.09 | 0.136 | 262 | 2.00 | 0.11 tn | 0.04 tn | 0.04 tn | 0.04 tn |  |  |  |  | ab |
| 3.15 | 0.139 | 573 | 2.00 | 0.11 tn | 0.04 tn | 0.04 tn | 0.04 tn | 0.00 tn |  |  |  | ab |
| 3.19 | 0.141 | 613 | 2.01 | 0.12 tn | 0.05 tn | 0.05 tn | 0.05 tn | 0.01 tn | 0.01 tn |  |  | ab |
| 3.23 | 0.142 | 332 | 2.02 | 0.13 tn | 0.06 tn | 0.06 tn | 0.06 tn | 0.02 tn | 0.02 tn | 0.01 tn |  | ab |
| 3.26 | 0.144 | 131 | 2.14 | 0.25 \* | 0.18 \* | 0.18 \* | 0.18 \* | 0.140tn | 0.140tn | 0.13 tn | 0.12 tn | b |

Kesimpulan :

Berdasarkan hasil pengamatan pada uji lanjut Duncan dapat disimpulkan bahwa dalam hal rasa minuman fungsional, sampel kode 512, 756, 951, 842 tidak berbeda nyata secara signifikan terhadap sampel kode 262, 573, 613, 332 tetapi berbeda nyata dengan sampel kode 131, selain itu sampel kode 262, 573, 613, 332 tidak berbeda secara signifikan terhadap sampel kode 512, 756, 951,

842, 131. Dan sampel kode 131 tidak berbeda nyata secara signifikan terhadap sampel kode 262, 573, 613, 332 tetapi berbeda nyata dengan sampel kode 512, 756, 951, 842.

**Tabel 28. Rata-rata Perbandingan Bahan Baku : air Terpilih**

|  |  |  |  |
| --- | --- | --- | --- |
| **Perbandingan salak bongkok dengan air /**  **daun jambu biji dengan air** | **Warna** | **Rasa** | **Aroma** |
| **1:1 / 1:1** | 3.20 (a) | 3.13 (a) | 3.20 (a) |
| **1:1 / 1:2** | 3.20 (a) | 3.40 (a) | 3.33 (a) |
| **1:1 / 1:3** | 3.53 (a) | 3.53 (ab) | 3.47 (a) |
| **1:2 / 1:1** | 3.33 (a) | 3.60 (ab) | 3.53 (a) |
| **1:2 / 1:2** | 3.60 (a) | 3.60 (ab) | 3.47 (a) |
| **1:2 / 1:3** | 4.00 (a) | 4.13 (b) | 3.87 (a) |
| **1:3 / 1:1** | 3.60 (a) | 3.40 (a) | 3.67 (a) |
| **1:3 / 1:2** | 3.53 (a) | 3.53 (ab) | 3.47 (a) |
| **1:3 / 1:3** | 3.60 (a) | 3.40 (a) | 3.33 (a) |

Keterangan :

Setiap huruf yang berbeda menunjukan hasil yang berbeda nyata pada taraf 5%

Kesimpulan:

Berdasarkan hasil pengamatan diatas dapat disimpulkan perbandingan antara bahan baku dengan air yang yang terpilih dengan atribut warna, rasa, dan aroma pada penelitian pendahuluan adalah sampel kode 131 (sari salak 1 : air 2 dan sari daun jambu 1 : air 3) yang ditunjukan dengan jumlah rata-rata terbesar, sehingga perbandingan bahan baku dengan air tersebut selanjutnya digunakan dalam pembuatan minuman fungsional pada penelitian utama.

**Lampiran 2. Penelitian Pendahuluan Pengujian Kadar Tanin**

**Penentuan kadar Tanin, metode Lowenthal – Procter ( Sudarmadji, 1984 )**

Sampel sebanyak 2 – 3 gram yang sudah ditimbang kemudian sampel dimasukan kedalam gelas kimia dan tambahkan 200 ml aquadest. Kemudian dipanaskan selama 30 menit. Dinginkan kemudian dimasukan kedalam labu ukur 250 ml lalu tanda bataskan. Kemudian disaring sebanyak 10 ml dan masukan kedalam labu ukur 100 ml ditambahka 5 ml gelatin, 10 ml NaCl dan 1 gram kaolin. Diamkan 10 menit kemudian tanda bataskan. Filtrat diambil sebanyak 10 ml dimasukan kedalam labu erlemeyer. Kemudian ditambahkan 50 ml aquadest dan 5 ml indigo karmin 10 ml lalu dititrasi dengan KMnO4 0,01 N catat volume KMnO4.

Perhitungan :

1 ml KMnO4 0,1 N = 0,00416 g tanin.

Kadar tanin = × 100%

Perhitungan Analisis Pendahuluan :

Diketahui :

Daun jambu : air = 1:3

|  |  |  |  |
| --- | --- | --- | --- |
| W sampel (1:3) | V1 | V2 | Vrata-rata |
| 2,37 gram | 2,10 mL | 2,10 mL | 2,10 mL |

Kadar tanin = × 100%

= 9,10 %

**Lampiran 3. Penelitian Pendahuluan Pengujian Vitamin C Metode Iodimetri (AOAC, 1995)**

Pertama-tamatimbang sampel sebanyak 5 gram, kemudian ditambahkan 100 ml aquadest dan 5 ml amilum. Kemudian di titrasi dengan larutan I2 sampai terbentuk titik akhir tirasi berwarna biru.

I2

Keterangan :

V = Volume titrasi

N = Normalitas I2

Be Vit C = Berat equivalen vitamin C

Ws = Berat sampel

Perhitungan Analisis Pendahuluan :

Salak : air = 1:2

|  |  |  |  |
| --- | --- | --- | --- |
| W sampel | V1 | V2 | Vrata-rata |
| 5 gram | 0.4 mL | 0.35 mL | 0.375 mL |

6,604 mg/100 gram

**Lampiran 4. Penelitian Pendahuluan Pengujian Gula Total metode**

**“Luuf Schoorl” (Sudarmaji,1998)**

Prinsip :

Berdasarkan pembentukan gula reduksi yang bereaksi dengan ion Cu2+ berlebih membentuk endapan Cu2O pada pemanasan dengan waktu tertentu, kelebihan Cu2+ direaksikan dengan KI dalam suasana asam. I2 yang terbentuk dititrasi dengan larutan tiosulfat dengan menggunakan indikator.

Prosedur :

3.1. Penetapan gula sebelum inversi

Sampel ditimbang 5 gram, dimasukan kedalam labu takar 100 mL tambahkan aquadest sampai tanda batas, larutan ini disebut larutan A. Sebanyak 10 mL larutan A dipipet kedalam erlenmeyer ditambahkan 50 mL aquadest dan 10 mL larutan Luufs. Larutan tersebut dipanaskan selama 10 menit dan didinginkan dengan air mengalir. Sebanyak 5 mL H2SO4 6 N, I mL amilum, dan 1.5 mL KI ditambahkan kedalam larutan tersebut, amati perubahan warna larutan kemudian titrasi dengan larutan tiosulfat sampai TAT putih susu, catat volume tiosulfat yang habis digunakan.

Perhitungan :

x 100%

Perhitungan Gula sebelum inverse pendahuluan :

Ws = 1 ml

Vblanko = 11,00 ml

Vs sebelum inverse = 6,10 ml

Fp sebelum inverse =

Pembakuan N Na2S2O3 :

W KIO3  = 0,040 gram

BE KIO3 = 35, 667

V Na2S2O3 = 11,40 ml

Pembakuan = = 0,098 N

ml Na2S2O3 =

= = 4,80 ml

Kandungan gula sebelum inverse = X 100%

= X 100% = 11,70%

3.2. Penetapan gula setelah inversi

Sebanyak 10 mL larutan A dipipet kedalam Erlenmeyer ditambahkan 50 mL aquadest dan 10 mL HCl, lalu dipanaskan dalam penangas air selama 15 menit. Setelah didinginkan larutan tersebut ditambah NaOH sampai netral. Larutan tersebut dipindahkan kadalam labu ukur 100 mL lalu tambahkan aquadest sampai tanda batas, larutan tersebut merupakan larutan B. 10 mL larutan B dipipet kedalam Erlenmeyer ditambah 10 mL larutan Luufs dan 50 mL aquadest lalu dipanaskan selama 10 menit. Setelah larutan dingin, tambahkan 5 mL H2SO4 6N dan 1.5 gram KI amati perubahan warna, jika berwarna kuning jerami ditambahkan 1 ml amilum sebelum dititrasi dengan larutan tiosulfat sampai TAT putih susu. Catat volume yang digunakan.

Perhitungan :

x 100%

Perhitungan Gula sebelum inverse pendahuluan :

Ws = 1 ml

Vblanko = 11,00 ml

Vs setelah inverse = 10,30 ml

Fp setelah inverse = 2X

Pembakuan N Na2S2O3 :

W KIO3  = 0,040 gram

BE KIO3 = 35, 667

V Na2S2O3 = 11,40 ml

Pembakuan = = 0,098 N

ml Na2S2O3 =

= = 0,686 ml

Kandungan gula setelah inverse = X 100%

= X 100% = 16,46 %

Kadar sukrosa = (kadar gula setelah inverse-kadar gula sebelum inverse) x 0.95

= (16,46 - 11,70) x 0,95

= 4,52 %

Kadar gula total = (kadar gula sebelum inverse + kadar gula sukrosa)

= 11,70 + 4,52

= 16,22 %

**Lampiran 5. Uji Organoleptik Penelitian Utama**

**FORMULIR UJI ORGANOLEPTIK**

**UJI HEDONIK**

Sample : Minuman fungsional sari daun jambu biji dengan sari salak

Nama Panelis :

Tanggal :

Pekerjaan :

Paraf :

Berikan penilaian saudara terhadap warna, rasa, dan aroma pada setiap sampel Minuman fungsional sari daun jambu biji dengan sari salak bongkok dengan nilai :

Tabel 29. Skala Hedonik

|  |  |
| --- | --- |
| **Skala Hedonik** | **Skala Numerik** |
| Sangat Disukai | 5 |
| Disukai | 4 |
| Biasa | 3 |
| Tidak Disukai | 2 |
| Sangat Tidak Disukai | 1 |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Kode | Warna | Rasa | Aroma |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Lampiran 5. Hasil Uji Organoleptik Penelitian Utama**

**Tabel 30. Data Perhitungan Respon Organoleptik Terhadap Warna**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Perbandingan Sari | Konsentrasi Madu | Kelompok Ulangan | | | | | | Total | | Rata-rata | |
| A | B | 1 |  | 2 |  | 3 |  |  |  |  |  |
|  |  | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| a1 | b1 | 3.57 | 2.01 | 3.60 | 2.02 | 3.53 | 2.00 | 10.70 | 6.03 | 3.57 | 2.01 |
|  | b2 | 3.67 | 2.04 | 3.60 | 2.02 | 3.43 | 1.98 | 10.70 | 6.03 | 3.57 | 2.01 |
|  | b3 | 3.53 | 2.00 | 3.50 | 1.99 | 3.67 | 2.03 | 10.70 | 6.03 | 3.57 | 2.01 |
| Sub Total |  | 10.77 | 6.05 | 10.70 | 6.03 | 10.63 | 6.01 | 32.10 | 18.09 | 10.70 | 6.03 |
| Rata-Rata |  | 3.59 | 2.02 | 3.57 | 2.01 | 3.54 | 2.00 | 10.70 | 6.03 | 3.57 | 2.01 |
| a2 | b1 | 3.70 | 2.04 | 3.60 | 2.02 | 3.70 | 2.04 | 11.00 | 6.10 | 3.67 | 2.03 |
|  | b2 | 3.87 | 2.18 | 3.80 | 2.07 | 3.67 | 2.03 | 11.33 | 6.28 | 3.78 | 2.09 |
|  | b3 | 4.03 | 2.12 | 4.10 | 2.14 | 4.17 | 2.15 | 12.30 | 6.41 | 4.10 | 2.14 |
| Sub Total |  | 11.60 | 6.35 | 11.50 | 6.22 | 11.53 | 6.23 | 34.63 | 18.80 | 11.54 | 6.27 |
| Rata-Rata |  | 3.87 | 2.12 | 3.83 | 2.07 | 3.84 | 2.08 | 11.54 | 6.27 | 3.85 | 2.09 |
| a3 | b1 | 3.90 | 2.09 | 3.97 | 2.11 | 3.97 | 2.10 | 11.83 | 6.30 | 3.94 | 2.10 |
|  | b2 | 3.93 | 2.10 | 4.00 | 2.11 | 3.97 | 2.11 | 11.90 | 6.32 | 3.97 | 2.11 |
|  | b3 | 3.97 | 2.11 | 4.03 | 2.12 | 3.90 | 2.09 | 11.90 | 6.32 | 3.97 | 2.11 |
| Sub Total |  | 11.80 | 6.30 | 12.00 | 6.34 | 11.83 | 6.30 | 35.63 | 18.94 | 11.88 | 6.31 |
| Rata-Rata |  | 3.93 | 2.10 | 4.00 | 2.11 | 3.94 | 2.10 | 11.88 | 6.31 | 3.96 | 2.10 |
| Total |  | 34.17 | 18.69 | 34.20 | 18.59 | 34.00 | 18.55 | 102.37 | 55.83 | 34.12 | 18.61 |
| Rata-Rata |  | 3.80 | 2.08 | 3.80 | 2.07 | 3.78 | 2.06 | 11.37 | 6.20 | 3.79 | 2.07 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | | | **Jumlah** | **Rata-rata** |
| **(a)** | **(b)** | | |  |  |
|  | **b1** | **b2** | **b3** |  |  |
| **a1** | 6.03 | 6.03 | 6.03 | 18.09 | 6.03 |
| **a2** | 6.10 | 6.28 | 6.41 | 18.80 | 6.27 |
| **a3** | 6.30 | 6.32 | 6.32 | 18.94 | 6.31 |
| **Jumlah** | 18.44 | 18.64 | 18.76 | 55.83 | 18.61 |
| **Rata-Rata** | 6.15 | 6.21 | 6.25 | 18.61 | 6.20 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 115,46
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (2,01)2 + … + (2,09)2 ] – 115,46

= 0,0785

* JKK = – FK

= – 115,46

= 0,0012

* JK(a) = – FK

= – 115,46

= 0,0462

* JK(b) = – FK

= – 115,46

= 0,0056

* JK(ab) = – FK – JK(a) – JK(b)

= – 115,46 - 0,0462 - 0,0056

= 0,0104

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 0,0785 - 0,0006 - 0,0462 - 0,0056 - 0,0151

= 0,0151

**Tabel 31. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.0012 | 0.0006 | - |  |
| Perlakuan | 8 | 0.0622 | 0.0078 | - |  |
| Faktor A | 2 | 0.0462 | 0.0231 | 24.55 \* | 3.63 |
| Faktor B | 2 | 0.0056 | 0.0028 | 2.99 tn | 3.63 |
| Interaksi (AB) | 4 | 0.0104 | 0.0026 | 2.76 tn | 3.01 |
| Galat | 16 | 0.0151 | 0.0009 |  |  |
| Total | 26 | 0.0785 |  |  |  |

Keterangan :tn = tidakberbedanyata

\* = Berbedanyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa faktor A (perbandingan sari daun jambu biji dengan sari salak bongkok) berbeda nyata terhadap warna minuman fungsional *,* sehingga dilakukan uji lanjut Duncan sedangkan faktor B (konsentrasi madu) serta interaksi AB (perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu) tidak berbeda nyata terhadap warna minuman fungsional, sehingga tidak perlu dilakukan uji lanjut Duncan.

**Uji Jarak Duncan Untuk Warna**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,010

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** |  |  | **Taraf Nyata 5%** |
|  |  |  |  | **1** | **2** | **3** |  |
| - | - | a1 | 2.010 | - | - | - | a |
| 3.00 | 0.031 | a2 | 2.089 | 0.079 \* | - | - | b |
| 3.15 | 0.032 | a3 | 2.105 | 0.094 \* | 0.015 tn | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

**Tabel 32. Data Perhitungan Respon Organoleptik Terhadap Aroma**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Perbandingan Sari | Konsentrasi Madu | Kelompok Ulangan | | | | | | Total | | Rata-rata | |
| A | B | 1 |  | 2 |  | 3 |  |
|  |  | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| a1 (1:1) | b1 (5%) | 3.70 | 2.05 | 3.70 | 2.04 | 3.80 | 2.07 | 11.20 | 6.16 | 3.73 | 2.05 |
| b2 (10%) | 3.83 | 2.08 | 3.70 | 2.04 | 3.90 | 2.09 | 11.43 | 6.21 | 3.81 | 2.07 |
| b3 (15%) | 3.83 | 2.08 | 3.83 | 2.08 | 3.90 | 2.09 | 11.57 | 6.24 | 3.86 | 2.08 |
| Sub Total |  | 11.37 | 6.20 | 11.23 | 6.16 | 11.60 | 6.25 | 34.20 | 18.61 | 11.40 | 6.20 |
| Rata-Rata |  | 3.79 | 2.07 | 3.74 | 2.05 | 3.87 | 2.08 | 11.40 | 6.20 | 3.80 | 2.07 |
| a2 (1:2) | b1 (5%) | 3.60 | 2.02 | 3.80 | 2.07 | 3.97 | 2.11 | 11.37 | 6.19 | 3.79 | 2.06 |
| b2 (10%) | 4.03 | 2.12 | 4.03 | 2.12 | 4.07 | 2.13 | 12.13 | 6.38 | 4.04 | 2.13 |
| b3 (15%) | 4.17 | 2.15 | 4.10 | 2.14 | 4.17 | 2.15 | 12.43 | 6.45 | 4.14 | 2.15 |
| Sub Total |  | 11.80 | 6.30 | 11.93 | 6.33 | 12.20 | 6.39 | 35.93 | 19.02 | 11.98 | 6.34 |
| Rata-Rata |  | 3.93 | 2.10 | 3.98 | 2.11 | 4.07 | 2.13 | 11.98 | 6.34 | 3.99 | 2.11 |
| a3 (1:3) | b1 (5%) | 3.87 | 2.09 | 3.73 | 2.05 | 3.93 | 2.10 | 11.53 | 6.24 | 3.84 | 2.08 |
| b2 (10%) | 3.97 | 2.11 | 3.87 | 2.08 | 3.93 | 2.10 | 11.77 | 6.29 | 3.92 | 2.10 |
| b3 (15%) | 4.13 | 2.14 | 4.07 | 2.13 | 4.13 | 2.14 | 12.33 | 6.42 | 4.11 | 2.14 |
| Sub Total |  | 11.97 | 6.34 | 11.67 | 6.27 | 12.00 | 6.34 | 35.63 | 18.95 | 11.88 | 6.32 |
| Rata-Rata |  | 3.99 | 2.11 | 3.89 | 2.09 | 4.00 | 2.11 | 11.88 | 6.32 | 3.96 | 2.11 |
| Total |  | 35.13 | 18.83 | 34.83 | 18.76 | 35.80 | 18.99 | 105.77 | 56.58 | 35.26 | 18.86 |
| Rata-Rata |  | 3.90 | 2.09 | 3.87 | 2.08 | 3.98 | 2.11 | 11.75 | 6.29 | 3.92 | 2.10 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | | | **Jumlah** | **Rata-rata** |
| **(a)** | **(b)** | | |  |  |
|  | **b1** | **b2** | **b3** |  |  |
| **a1** | 6.16 | 6.21 | 6.24 | 18.61 | 6.20 |
| **a2** | 6.19 | 6.38 | 6.45 | 19.02 | 6.34 |
| **a3** | 6.24 | 6.29 | 6.42 | 18.95 | 6.32 |
| **Jumlah** | 18.59 | 18.88 | 19.11 | 56.58 | 18.86 |
| **Rata-Rata** | 6.20 | 6.29 | 6.37 | 18.86 | 6.29 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 118,56
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (2,05)2 + … + (2,14)2 ] – 118,56

= 0,0360

* JKK = – FK

= – 118,56

= 0,0029

* JK(a) = – FK

= – 118,56

= 0,0104

* JK(b) = – FK

= – 118,56

= 0,0149

* JK(ab) = – FK – JK(a) – JK(b)

= – 118,56 - 0,0104 - 0,0149

= 0,0034

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 0,0360 - 0,0029 - 0,0104 - 0,0149 - 0,0034

= 0,0044

**Tabel 33. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.0029 | 0.0015 | - |  |
| Perlakuan | 8 | 0.0287 | 0.0036 | - |  |
| Faktor A | 2 | 0.0104 | 0.0052 | 18.95 \* | 3.63 |
| Faktor B | 2 | 0.0149 | 0.0075 | 27.24 \* | 3.63 |
| Interaksi (AB) | 4 | 0.0034 | 0.0009 | 3.13 \* | 3.01 |
| Galat | 16 | 0.0044 | 0.0003 |  |  |
| Total | 26 | 0.0360 |  |  |  |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu berbeda nyata terhadap aroma minuman fungsional, sehingga perlu dilakukan uji lanjut duncan.

**Uji Jarak Duncan Untuk Aroma**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,006

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
|  |  |  |  | **1** | **2** | **3** |  |
| - | - | a1 | 2.068 | - | - | - | a |
| 3.00 | 0.017 | a3 | 2.105 | 0.037 \* | - | - | b |
| 3.15 | 0.017 | a2 | 2.113 | 0.045 \* | 0.008 tn | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Jarak Berganda Duncan Untuk Faktor Konsentrasi Madu (B)

Standar Error (Sy) = = 0,006

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
|  |  |  |  | **1** | **2** | **3** |  |
| - | - | b1 | 2.066 | - | - | - | a |
| 3.00 | 0.017 | b2 | 2.098 | 0.032 \* | - | - | b |
| 3.15 | 0.017 | b3 | 2.123 | 0.057 \* | 0.025 \* | - | c |

Keterangan : tn = tidak berbeda nyata

\*= Berbeda nyata

Tabel 34.Uji Jarak Berganda Duncan untuk Interaksi A X B terhadap aroma minuman fungsional

Standar Error (Sy) =

= = 0.01

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR | LSR | Rata-rata Perlakuan | | Perlakuan | | | | | | | | | Taraf |
|  |  |  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0.05 |
| - | - | a1b1 | 2.05 | - |  |  |  |  |  |  |  |  | a |
| 3.00 | 0.029 | a2b1 | 2.06 | 0.0116 tn | - |  |  |  |  |  |  |  | a |
| 3.14 | 0.030 | a1b2 | 2.07 | 0.0174 tn | 0.0059 tn | - |  |  |  |  |  |  | ab |
| 3.23 | 0.031 | a3b1 | 2.08 | 0.0261 tn | 0.0145 tn | 0.0086 tn | - |  |  |  |  |  | ab |
| 3.30 | 0.032 | a1b3 | 2.08 | 0.0280 tn | 0.0164 tn | 0.0105 tn | 0.0019 tn | - |  |  |  |  | ab |
| 3.34 | 0.032 | a3b2 | 2.10 | 0.0438 \* | 0.0322 \* | 0.0264 tn | 0.0177 tn | 0.0158 tn | - |  |  |  | bc |
| 3.38 | 0.032 | a2b2 | 2.13 | 0.0735 \* | 0.0619 \* | 0.0561 \* | 0.0474 \* | 0.0455 \* | 0.0297 tn | - |  |  | cde |
| 3.40 | 0.032 | a3b3 | 2.14 | 0.0866 \* | 0.0751 \* | 0.0692 \* | 0.0606 \* | 0.0587 \* | 0.0429 \* | 0.0132 tn | - |  | de |
| 3.42 | 0.033 | a2b3 | 2.15 | 0.0953 \* | 0.0837 \* | 0.0779 \* | 0.0692 \* | 0.0673 \* | 0.0515 \* | 0.0218 tn | 0.0086 tn | - | e |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Lanjut dua arah

Faktor A yang sama B yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a1b1 | 2.053 | - | - | - | a |
| 3.00 | 0.0170 | a1b2 | 2.070 | 0.0174 \* | - | - | b |
| 3.15 | 0.0170 | a1b3 | 2.081 | 0.0280 \* | 0.011 tn | - | b |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a2b1 | 2.065 | - | - | - | a |
| 3.00 | 0.017 | a2b2 | 2.127 | 0.062 \* | - | - | b |
| 3.15 | 0.017 | a2b3 | 2.148 | 0.084 \* | 0.022 \* | - | c |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a3b1 | 2.079 | - | - | - | a |
| 3.00 | 0.017 | a3b2 | 2.097 | 0.018 \* | - | - | b |
| 3.15 | 0.017 | a3b3 | 2.140 | 0.061 \* | 0.043 \* | - | c |

Faktor B yang sama A yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a1b1 | 2.053 | - | - | - | a |
| 3.00 | 0.017 | a2b1 | 2.065 | 0.012 tn | - | - | ab |
| 3.15 | 0.017 | a3b1 | 2.079 | 0.026 \* | 0.015 tn | - | b |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a1b2 | 2.070 | - | - | - | a |
| 3.00 | 0.017 | a3b2 | 2.097 | 0.0264 \* | - | - | b |
| 3.15 | 0.017 | a2b2 | 2.127 | 0.056 \* | 0.030 \* | - | c |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |  |
| - | - | a1b3 | 2.081 | - | - | - | a |
| 3.00 | 0.017 | a3b3 | 2.140 | 0.059 \* | - | - | b |
| 3.15 | 0.017 | a2b3 | 2.148 | 0.067 \* | 0.009 tn | - | b |

Tabel 35. Pengaruh Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok terhadap Aroma Minuman Fungsional.

|  |  |  |  |
| --- | --- | --- | --- |
| **Perbandingan Sari (A)** | **KONSENTRASI MADU (B)** | | |
| **b1** | **b2** | **b3** |
| **a1** | A | A | A |
| 2.053 | 2.070 | 2.081 |
| a | b | B |
| **a2** | AB | C | B |
| 2.065 | 2.127 | 2.148 |
| a | b | C |
| **a3** | B | B | B |
| 2.079 | 2.097 | 2.140 |
| a | b | C |

Keterangan : Nilai rata-rata perlakuan yang ditandai notasi huruf yang sama menunjukkan tidak berbeda nyata dan notasi huruf yang berbeda menunjukkan perbedaan yang nyata menurut uji lanjut duncan pada taraf nyata 5%. Notasi huruf kapital dibaca vertikal. Notasi huruf kecil dibaca horizontal.

**Tabel 36. Data Perhitungan Respon Organoleptik Terhadap Rasa**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Perbandingan Sari | Konsentrasi Madu | Kelompok Ulangan | | | | | | Total | | Rata-rata | |
| a | b | 1 |  | 2 |  | 3 |  |  |  |  |  |
|  |  | DA | DT | DA | DT | DA | DT | DA | DT | DA | DT |
| a1 | b1 | 3.43 | 1.98 | 3.50 | 1.99 | 3.50 | 1.99 | 10.43 | 5.96 | 3.48 | 1.99 |
|  | b2 | 3.60 | 2.02 | 3.47 | 1.99 | 3.47 | 1.99 | 10.53 | 6.00 | 3.51 | 2.00 |
|  | b3 | 3.57 | 2.01 | 3.60 | 2.02 | 3.60 | 2.02 | 10.77 | 6.04 | 3.59 | 2.01 |
| Sub Total |  | 10.60 | 6.01 | 10.57 | 6.00 | 10.57 | 6.00 | 31.73 | 18.00 | 10.58 | 6.00 |
| Rata-Rata |  | 3.53 | 2.00 | 3.52 | 2.00 | 3.52 | 2.00 | 10.58 | 6.00 | 3.53 | 2.00 |
| a2 | b1 | 3.63 | 2.03 | 3.60 | 2.02 | 3.60 | 2.02 | 10.83 | 6.07 | 3.61 | 2.02 |
|  | b2 | 3.77 | 2.16 | 3.73 | 2.05 | 3.73 | 2.05 | 11.23 | 6.26 | 3.74 | 2.09 |
|  | b3 | 4.00 | 2.11 | 4.07 | 2.13 | 4.07 | 2.13 | 12.13 | 6.37 | 4.04 | 2.12 |
| Sub Total |  | 11.40 | 6.30 | 11.40 | 6.20 | 11.40 | 6.20 | 34.20 | 18.70 | 11.40 | 6.23 |
| Rata-Rata |  | 3.80 | 2.10 | 3.80 | 2.07 | 3.80 | 2.07 | 11.40 | 6.23 | 3.80 | 2.08 |
| a3 | b1 | 3.83 | 2.08 | 3.83 | 2.08 | 3.83 | 2.08 | 11.50 | 6.23 | 3.83 | 2.08 |
|  | b2 | 3.70 | 2.04 | 3.77 | 2.06 | 3.77 | 2.06 | 11.23 | 6.16 | 3.74 | 2.05 |
|  | b3 | 3.90 | 2.09 | 3.93 | 2.10 | 3.93 | 2.10 | 11.77 | 6.29 | 3.92 | 2.10 |
| Sub Total |  | 11.43 | 6.21 | 11.53 | 6.23 | 11.53 | 6.23 | 34.50 | 18.67 | 11.50 | 6.22 |
| Rata-Rata |  | 3.81 | 2.07 | 3.84 | 2.08 | 3.84 | 2.08 | 11.50 | 6.22 | 3.83 | 2.07 |
| Total |  | 33.43 | 18.52 | 33.50 | 18.43 | 33.50 | 18.43 | 100.43 | 55.38 | 33.48 | 18.46 |
| Rata-Rata |  | 3.71 | 2.06 | 3.72 | 2.05 | 3.72 | 2.05 | 11.16 | 6.15 | 3.72 | 2.05 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | | | **Jumlah** | **Rata-rata** |
| **(a)** | **(b)** | | |  |  |
|  | **b1** | **b2** | **b3** |  |  |
| **a1** | 5.96 | 6.00 | 6.04 | 18.00 | 6.00 |
| **a2** | 6.07 | 6.26 | 6.37 | 18.70 | 6.23 |
| **a3** | 6.23 | 6.16 | 6.29 | 18.67 | 6.22 |
| **Jumlah** | 18.26 | 18.42 | 18.70 | 55.38 | 18.46 |
| **Rata-Rata** | 6.09 | 6.14 | 6.23 | 18.46 | 6.15 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 113,59
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (1,98)2 + … + (3,93) 2 ] – 113,59

= 0,0642

* JKK = – FK

= – 113,59

= 0,0006

* JK(a) = – FK

= – 113,59

= 0,0352

* JK(b) = – FK

= – 113,59

= 0,0112

* JK(ab) = – FK – JK(a) – JK(b)

= – 113,59 - 0,0352 - 0,0112

= 0,0085

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 0,0642 – 0,0006 – 0,0352 – 0,0112 – 0,0085

= 0,0086

**Tabel 37. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.0006 | 0.0003 | - |  |
| Perlakuan | 8 | 0.0550 | 0.0069 | - |  |
| Faktor A | 2 | 0.0352 | 0.0176 | 32.70 \* | 3.63 |
| Faktor B | 2 | 0.0112 | 0.0056 | 10.43 \* | 3.63 |
| Interaksi (AB) | 4 | 0.0085 | 0.0021 | 3.97 \* | 3.01 |
| Galat | 16 | 0.0086 | 0.0005 |  |  |
| Total | 26 | 0.0642 |  |  |  |

Keterangan : tn = tidak berbeda nyata

\*= Berbeda nyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu berbeda nyata terhadap rasa minuman fungsional, sehingga perlu dilakukan uji lanjut duncan.

**Uji Jarak Duncan Untuk Rasa**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,008

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** |  |  | **Taraf Nyata 5%** |
|  |  |  |  | **1** | **2** | **3** |  |
| - | - | a1 | 2.000 | - | - | - | a |
| 3.00 | 0.023 | a3 | 2.075 | 0.075 \* | - | - | b |
| 3.15 | 0.024 | a2 | 2.078 | 0.078 \* | 0.003 tn | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Jarak Berganda Duncan Untuk Faktor Konsentrasi Madu (B)

Standar Error (Sy) = = 0,006

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** |  |  | **Taraf Nyata 5%** |
|  |  |  |  | **1** | **2** | **3** |  |
| - | - | b1 | 2.028 | - | - | - | a |
| 3.00 | 0.023 | b2 | 2.047 | 0.018 tn | - | - | a |
| 3.15 | 0.024 | b3 | 2.078 | 0.049 \* | 0.031 \* | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Tabel 38.Uji Jarak Berganda Duncan untuk Interaksi A X B terhadap rasa minuman fungsional

Standar Error (Sy) =

= = 0.013

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR | LSR | Rata-rata Perlakuan | | Perlakuan | | | | | | | | | Taraf |
| Kode | Rata-rata | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0.05 |
| - | - | a1b1 | 1.99 | - |  |  |  |  |  |  |  |  | a |
| 3.00 | 0.040 | a1b2 | 2.00 | 0.0108 tn | - |  |  |  |  |  |  |  | a |
| 3.14 | 0.042 | a1b3 | 2.01 | 0.0261 tn | 0.0152 tn | - |  |  |  |  |  |  | ab |
| 3.23 | 0.043 | a2b1 | 2.02 | 0.0344 tn | 0.0236 tn | 0.0084 tn | - |  |  |  |  |  | ab |
| 3.30 | 0.044 | a3b2 | 2.05 | 0.0663 \* | 0.0555 \* | 0.0403 tn | 0.0319 tn | - |  |  |  |  | bc |
| 3.34 | 0.045 | a3b1 | 2.08 | 0.0877 \* | 0.0769 \* | 0.0617 \* | 0.0533 \* | 0.0214 tn | - |  |  |  | c |
| 3.38 | 0.045 | a2b2 | 2.09 | 0.1003 \* | 0.0895 \* | 0.0743 \* | 0.0659 \* | 0.0340 tn | 0.0126 tn | - |  |  | cd |
| 3.40 | 0.046 | a3b3 | 2.10 | 0.1073 \* | 0.0965 \* | 0.0813 \* | 0.0729 \* | 0.0410 tn | 0.0196 tn | 0.0070 tn | - |  | cd |
| 3.42 | 0.046 | a2b3 | 2.12 | 0.1370 \* | 0.1262 \* | 0.1110 \* | 0.1026 \* | 0.0707 \* | 0.0493 \* | 0.0367 tn | 0.0297 tn | - | d |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Lanjut dua arah

Faktor A yang sama B yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** |  |  | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |
| - | - | a1b1 | 1.988 | - | - | - | a |
| 3.00 | 0.023 | a1b2 | 1.999 | 0.011 tn | - | - | ab |
| 3.15 | 0.024 | a1b3 | 2.014 | 0.026 \* | 0.015 tn | - | b |
|  |  |  |  |  |  |  |  |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** |
| - | - | a2b1 | 2.022 | - | - | - | a |
| 3.00 | 0.023 | a2b2 | 2.088 | 0.066 \* | - | - | b |
| 3.15 | 0.024 | a2b3 | 2.125 | 0.103 \* | 0.037 \* | - | c |
|  |  |  |  |  |  |  |  |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
|  |  | **1** | **2** | **3** |
| - | - | a3b2 | 2.054 | - | - | - | a |
| 3.00 | 0.023 | a3b1 | 2.075 | 0.021 tn | - | - | ab |
| 3.15 | 0.024 | a3b3 | 2.095 | 0.041 \* | 0.020 tn | - | b |

Faktor B yang sama A yang berbeda

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | **3** | |  |
| - | - | a1b1 | 1.988 | - | - | - | | a |
| 3.00 | 0.023 | a2b1 | 2.022 | 0.034 \* | - | - | | b |
| 3.15 | 0.024 | a3b1 | 2.075 | 0.088 \* | 0.053 \* | - | | c |
|  |  |  |  |  |  |  | |  |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | | **3** |  |
| - | - | a1b2 | 1.999 | - | - | | - | a |
| 3.00 | 0.023 | a3b2 | 2.054 | 0.055 \* | - | | - | b |
| 3.15 | 0.024 | a2b2 | 2.088 | 0.090 \* | 0.034 \* | | - | c |
|  |  |  |  |  |  | |  |  |
| **SSR 5%** | **LSR 5%** | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **Kode** | **Nilai** | **1** | **2** | | **3** |  |
| - | - | a1b3 | 2.014 | - | - | | - | a |
| 3.00 | 0.023 | a3b3 | 2.095 | 0.081 \* | - | | - | b |
| 3.15 | 0.024 | a2b3 | 2.125 | 0.111 \* | 0.030 \* | | - | c |

Tabel 39. Pengaruh Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok Terhadap Rasa Minuman Fungsional.

|  |  |  |  |
| --- | --- | --- | --- |
| **Perbandingan Sari (A)** | **KONSENTRASI MADU (B)** | | |
| **b1** | **b2** | **b3** |
| **a1** | A | A | A |
| 1.988 | 1.999 | 2.014 |
| a | ab | b |
| **a2** | B | C | C |
| 2.022 | 2.088 | 2.125 |
| a | b | c |
| **a3** | C | B | B |
| 2.075 | 2.054 | 2.095 |
| ab | a | b |

Keterangan : Nilai rata-rata perlakuan yang ditandai notasi huruf yang sama menunjukkan tidak berbeda nyata dan notasi huruf yang berbeda menunjukkan perbedaan yang nyata menurut uji lanjut duncan pada taraf nyata 5%. Notasi huruf kapital dibaca vertikal. Notasi huruf kecil dibaca horizontal.

**Lampiran 6. Analisis Penentuan Padatan Terlarut**

**Penentuan Total Padatan Terlarut Dengan Alat Refraktometer (Ranggana, 1986).**

Total padatan terlarut dari minuman fungsional diukur dengan menggunakan alat hand refraktometer. Sebelum digunakan terlebih dahulu ditetesi dengan aquadest untuk memeriksa indeks bias berada di skalanol, setelah itu dilap, kemudian diteteskan sampel dan diukur indeks biasnya. Total padatan terlarut dinyatakan dalam oBrix.

**Lampiran 6. Hasil Analisis Penentuan Padatan Terlarut Penelitian Utama**

Tabel 40. Data Analisis Total Padatan Terlarut Pada Minuman Fungsional

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perbandingan sari** | **Konsentrasi madu** | **Kelompok Ulangan** | | | **Total** | **Rata-Rata** |
|
| **A** | **B** | **1** | **2** | **3** |
| DA | DA | DA | DA | DA |
| a1 (1:1) | b1 (5%) | 5.25 | 5.35 | 5.15 | 15.75 | 5.25 |
| b2 (10%) | 5.35 | 5.65 | 5.15 | 16.15 | 5.38 |
| b3 (15%) | 6.35 | 6.15 | 6.55 | 19.06 | 6.35 |
| Sub Total | | 16.95 | 17.15 | 16.85 | 50.96 | 16.99 |
| Rata-Rata | | 5.65 | 5.72 | 5.62 | 16.99 | 5.66 |
| a2 (1:2) | b1 (5%) | 8.16 | 8.36 | 8.06 | 24.57 | 8.19 |
| b2 (10%) | 7.86 | 8.16 | 8.36 | 24.37 | 8.12 |
| b3 (15%) | 8.66 | 8.36 | 8.16 | 25.17 | 8.39 |
| Sub Total | | 24.67 | 24.87 | 24.57 | 74.10 | 24.70 |
| Rata-Rata | | 8.22 | 8.29 | 8.19 | 24.70 | 8.23 |
| a3 (1:3) | b1 (5%) | 10.96 | 10.36 | 11.36 | 32.68 | 10.89 |
| b2 (10%) | 10.76 | 11.16 | 10.86 | 32.78 | 10.93 |
| b3 (15%) | 10.96 | 11.16 | 11.16 | 33.29 | 11.10 |
| Sub Total | | 32.68 | 32.68 | 33.39 | 98.75 | 32.92 |
| Rata-Rata | | 10.89 | 10.89 | 11.13 | 32.92 | 10.97 |
| Total | | 74.30 | 74.71 | 74.80 | 223.81 | 74.60 |
| Rata-Rata | | 8.26 | 8.30 | 8.31 | 24.87 | 8.29 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan sari** | **Konsentrasi madu** | | | **Jumlah** | **Rata-rata** |
| **b1** | **b2** | **b3** |
| **a1** | 15.75 | 16.15 | 19.06 | 50.96 | 16.99 |
| **a2** | 24.57 | 24.37 | 25.17 | 74.10 | 24.70 |
| **a3** | 32.68 | 32.78 | 33.29 | 98.75 | 32.92 |
| **Jumlah** | 73.00 | 73.30 | 77.51 | 223.81 | 74.60 |
| **Rata-Rata** | 24.33 | 24.43 | 25.84 | 74.60 | 24.87 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 1855,25
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (5,25)2 + … +(11,16) 2 ] – 1855,25

= 130,46

* JKK = – FK

= – 1855,25

= 0,02

* JK(a) = – FK

= – 1855,25

= 126,95

* JK(b) = – FK

= – 1855,25

= 1,41

* JK(ab) = – FK – JK(a) – JK(b)

= – 1855,25 -126,95 - 1,41

= 0,94

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 130,46 - 0,02 - 126,95 - 1,41 - 0,94

= 1,14

**Tabel 41. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.02 | 0.0078 | - |  |
| Perlakuan | 8 | 129.31 | 16.16 | - |  |
| Faktor A | 2 | 126.95 | 63.48 | 894.31 \* | 3.63 |
| Faktor B | 2 | 1.41 | 0.71 | 9.95 \* | 3.63 |
| Interaksi (AB) | 4 | 0.94 | 0.24 | 3.32 \* | 3.01 |
| Galat | 16 | 1.14 | 0.0710 |  |  |
| Total | 26 | 130.46 |  |  |  |

Keterangan : tn = tidak berbeda nyata

\*= Berbeda nyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu berbeda nyata terhadap total padatan terlarut pada minuman fungsional, sehingga perlu dilakukan uji lanjut duncan.

**Uji Jarak Duncan Untuk Total Padatan Terlarut**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,0888

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
| **1** | **2** | **3** |
| - | - | a1 | 5.662 | - | - | - | a |
| 3.00 | 0.266 | a2 | 8.234 | 2.572 \* | - | - | b |
| 3.15 | 0.280 | a3 | 10.972 | 5.311 \* | 2.739 \* | - | c |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Jarak Berganda Duncan Untuk Faktor Konsentrasi Madu (B)

Standar Error (Sy) = = 0,0888

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
| **1** | **2** | **3** |
| - | - | b1 | 8.111 | - | - | - | a |
| 3.00 | 0.266 | b2 | 8.145 | 0.034 tn | - | - | a |
| 3.15 | 0.280 | b3 | 8.612 | 0.501 \* | 0.468 \* | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Tabel 42.Uji Jarak Berganda Duncan untuk Interaksi A X B terhadap rasa minuman fungsional

Standar Error (Sy) =

= = 0.154

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR | LSR | Rata-rata Perlakuan | | Perlakuan | | | | | | | | | Taraf |
| Kode | Rata-rata | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0.05 |
| - | - | a1b1 | 5.25 | - |  |  |  |  |  |  |  |  | a |
| 3.00 | 0.46 | a1b2 | 5.38 | 0.13 tn | - |  |  |  |  |  |  |  | a |
| 3.14 | 0.48 | a1b3 | 6.35 | 1.10 \* | 0.97 \* | - |  |  |  |  |  |  | b |
| 3.23 | 0.50 | a2b2 | 8.12 | 2.87 \* | 2.74 \* | 1.77 \* | - |  |  |  |  |  | c |
| 3.30 | 0.51 | a2b1 | 8.19 | 2.94 \* | 2.81 \* | 1.84 \* | 0.07 tn | - |  |  |  |  | c |
| 3.34 | 0.51 | a2b3 | 8.39 | 3.14 \* | 3.01 \* | 2.04 \* | 0.27 tn | 0.20 tn | - |  |  |  | c |
| 3.38 | 0.52 | a3b1 | 10.89 | 5.64 \* | 5.51 \* | 4.54 \* | 2.77 \* | 2.71 \* | 2.50 \* | - |  |  | d |
| 3.40 | 0.52 | a3b2 | 10.93 | 5.68 \* | 5.54 \* | 4.58 \* | 2.81 \* | 2.74 \* | 2.54 \* | 0.03 tn | - |  | d |
| 3.42 | 0.53 | a3b3 | 11.10 | 5.85 \* | 5.71 \* | 4.74 \* | 2.97 \* | 2.91 \* | 2.71 \* | 0.20 tn | 0.17 tn | - | d |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Lanjut dua arah

Faktor A yang sama B yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a1b1 | 5.25 | - | - | - | a |
| 3.00 | 0.266 | a1b2 | 5.38 | 0.13 tn | - | - | ab |
| 3.15 | 0.280 | a1b3 | 6.35 | 1.10 \* | 0.97 tn | - | b |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a2b2 | 8.12 | - | - | - | a |
| 3.00 | 0.266 | a2b1 | 8.19 | 0.07 tn | - | - | a |
| 3.15 | 0.280 | a2b3 | 8.39 | 0.27 tn | 0.20 tn | - | a |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a3b1 | 10.89 | - | - | - | a |
| 3.00 | 0.266 | a3b2 | 10.93 | 0.03 tn | - | - | a |
| 3.15 | 0.280 | a3b3 | 11.10 | 0.20 tn | 0.17 tn | - | a |

Faktor B yang sama A yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a1b1 | 5.25 | - | - | - | a |
| 3.00 | 0.266 | a2b1 | 8.19 | 2.94 \* | - | - | b |
| 3.15 | 0.280 | a3b1 | 10.89 | 5.64 \* | 2.71 \* | - | c |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a1b2 | 5.38 | - | - | - | a |
| 3.00 | 0.266 | a2b2 | 8.12 | 2.74 \* | - | - | b |
| 3.15 | 0.280 | a3b2 | 10.93 | 5.54 \* | 2.81 \* | - | c |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a1b3 | 6.35 | - | - | - | a |
| 3.00 | 0.266 | a2b3 | 8.39 | 2.04 \* | - | - | b |
| 3.15 | 0.280 | a3b3 | 11.10 | 4.74 \* | 2.71 \* | - | c |

Tabel 43. Pengaruh Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok terhadap total padatan terlarut Minuman Fungsional.

|  |  |  |  |
| --- | --- | --- | --- |
| **Perbandingan Sari (A)** | **KONSENTRASI MADU (B)** | | |
| **b1** | **b2** | **b3** |
| **a1** | A | A | A |
| 5.25 | 5.38 | 6.35 |
| a | ab | b |
| **a2** | B | B | B |
| 8.19 | 8.12 | 8.39 |
| a | a | a |
| **a3** | C | C | C |
| 10.89 | 10.93 | 11.10 |
| a | a | a |

Keterangan : Nilai rata-rata perlakuan yang ditandai notasi huruf yang sama menunjukkan tidak berbeda nyata dan notasi huruf yang berbeda menunjukkan perbedaan yang nyata menurut uji lanjut duncan pada taraf nyata 5%. Notasi huruf kapital dibaca vertikal. Notasi huruf kecil dibaca horizontal.

**Lampiran 7. Analisis Vitamin C Metode Iodimetri (AOAC, 1995)**

Pertama-tama timbang sampel sebanyak 5 gram, kemudian ditambahkan 100 ml aquadest dan 1 ml amilum.Kemudian di titrasi dengan larutan I2 sampai terbentuk titik akhir tirasi berwarna biru.

I2

Keterangan :

V = Volume titrasi

N = Normalitas I2

Be Vit C = Berat equivalen vitamin C

Ws = Berat sampel

**Lampiran 7. Hasil Analisis Kadar Vitamin C Penelitian Utama**

Tabel 44. Data Analisis Kadar Vitamin C Pada Minuman Fungsional

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | **Kelompok Ulangan** | | | **Total** | **Rata-Rata** |
|
| **A** | **B** | **1** | **2** | **3** |
| DA | DA | DA | DA | DA |
| a1 (1:1) | b1 (5%) | 44.03 | 44.47 | 44.47 | 132.97 | 44.32 |
| b2 (10%) | 43.15 | 44.03 | 43.15 | 130.33 | 43.44 |
| b3 (15%) | 44.91 | 44.91 | 43.59 | 133.41 | 44.47 |
| Sub Total | | 132.09 | 133.41 | 131.21 | 396.71 | 132.24 |
| Rata-Rata | | 44.03 | 44.47 | 43.74 | 132.24 | 44.08 |
| a2 (1:2) | b1 (5%) | 40.50 | 40.90 | 40.90 | 122.30 | 40.77 |
| b2 (10%) | 41.39 | 41.83 | 41.39 | 124.61 | 41.54 |
| b3 (15%) | 42.27 | 41.39 | 41.83 | 125.49 | 41.83 |
| Sub Total | | 124.16 | 124.12 | 124.12 | 372.40 | 124.13 |
| Rata-Rata | | 41.39 | 41.37 | 41.37 | 124.13 | 41.38 |
| a3 (1:3) | b1 (5%) | 38.74 | 40.07 | 39.63 | 118.44 | 39.48 |
| b2 (10%) | 39.63 | 40.95 | 40.95 | 121.53 | 40.51 |
| b3 (15%) | 40.50 | 41.83 | 41.83 | 124.16 | 41.39 |
| Sub Total | | 118.87 | 122.85 | 122.41 | 364.13 | 121.38 |
| Rata-Rata | | 39.62 | 40.95 | 40.80 | 121.38 | 40.46 |
| Total | | 375.12 | 380.38 | 377.74 | 1133.24 | 377.75 |
| Rata-Rata | | 41.68 | 42.26 | 41.97 | 125.92 | 41.97 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | | | **Jumlah** | **Rata-rata** |
| **b1** | **b2** | **b3** |
| **a1** | 132.97 | 130.33 | 133.41 | 396.71 | 132.24 |
| **a2** | 122.30 | 124.61 | 125.49 | 372.40 | 124.13 |
| **a3** | 118.44 | 121.53 | 124.16 | 364.13 | 121.38 |
| **Jumlah** | 373.71 | 376.47 | 383.06 | 1133.24 | 377.75 |
| **Rata-Rata** | 124.57 | 125.49 | 127.69 | 377.75 | 125.92 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 47564,10
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (44,03)2 + … +(41,83) 2 ] – 47564,10

= 78,55

* JKK = – FK

= – 47564,10

= 1,54

* JK(a) = – FK

= – 47564,10

= 63,74

* JK(b) = – FK

= – 47564,10

= 5,13

* JK(ab) = – FK – JK(a) – JK(b)

= – 47564,10 - 63,74 - 5,13

= 4,00

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 130,46 - 1,54 - 63,74 - 5,13 - 4,00

= 4,15

**Tabel 45. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **Db** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 1.54 | 0.7683 | - |  |
| Perlakuan | 8 | 72.86 | 9.11 | - |  |
| Faktor A | 2 | 63.74 | 31.87 | 122.83 \* | 3.63 |
| Faktor B | 2 | 5.13 | 2.56 | 9.88 \* | 3.63 |
| Interaksi (AB) | 4 | 4.00 | 1.00 | 3.85 \* | 3.01 |
| Galat | 16 | 4.15 | 0.2595 |  |  |
| Total | 26 | 78.55 |  |  |  |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu berbeda nyata terhadap kadar Vitamin C pada minuman fungsional, sehingga perlu dilakukan uji lanjut duncan.

**Uji Jarak Duncan Untuk Kadar Vitamin C**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,1698

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
| **1** | **2** | **3** |
| - | - | a3 | 40.459 | - | - | - | a |
| 3.00 | 0.509 | a2 | 41.378 | 0.919 \* | - | - | b |
| 3.15 | 0.535 | a1 | 44.079 | 3.620 \* | 2.701 \* | - | c |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Jarak Berganda Duncan Untuk Faktor Konsentrasi Madu (B)

Standar Error (Sy) = = 0,1698

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
| **1** | **2** | **3** |
| - | - | b1 | 41.523 | - | - | - | a |
| 3.00 | 0.509 | b2 | 41.830 | 0.307 tn | - | - | a |
| 3.15 | 0.535 | b3 | 42.562 | 1.039 \* | 0.732 \* | - | b |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Tabel 46.Uji Jarak Berganda Duncan untuk Interaksi A X B terhadap rasa minuman fungsional

Standar Error (Sy) =

= = 0.249

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR | LSR | Rata-rata Perlakuan | | Perlakuan | | | | | | | |  | Taraf |
| Kode | Rata-rata | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 7.00 | 8.00 | 9.00 | 0.05 |
| - | - | a3b1 | 39.48 | - |  |  |  |  |  |  |  |  | a |
| 3.00 | 0.88 | a3b2 | 40.51 | 1.03 \* | - |  |  |  |  |  |  |  | b |
| 3.14 | 0.92 | a2b1 | 40.77 | 1.29 \* | 0.26 tn | - |  |  |  |  |  |  | bc |
| 3.23 | 0.95 | a3b3 | 41.39 | 1.91 \* | 0.88 tn | 0.62 tn | - |  |  |  |  |  | bcd |
| 3.30 | 0.97 | a2b2 | 41.54 | 2.06 \* | 1.03 \* | 0.77 tn | 0.15 tn | - |  |  |  |  | cd |
| 3.34 | 0.98 | a2b3 | 41.83 | 2.35 \* | 1.32 \* | 1.06 \* | 0.44 tn | 0.29 tn | - |  |  |  | d |
| 3.38 | 0.99 | a1b2 | 43.44 | 3.96 \* | 2.93 \* | 2.68 \* | 2.06 \* | 1.91 \* | 1.61 \* | - |  |  | e |
| 3.40 | 1.00 | a1b1 | 44.32 | 4.84 \* | 3.81 \* | 3.56 \* | 2.94 \* | 2.79 \* | 2.49 \* | 0.88 tn | - |  | ef |
| 3.42 | 1.01 | a1b3 | 44.47 | 4.99 \* | 3.96 \* | 3.70 \* | 3.08 \* | 2.93 \* | 2.64 \* | 1.03 \* | 0.15 tn | - | f |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Uji Lanjut dua arah

Faktor A yang sama B yang berbeda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a1b2 | 43.44 | - | - | - | a |
| 3.00 | 0.509 | a1b1 | 44.32 | 0.88 \* | - | - | b |
| 3.15 | 0.535 | a1b3 | 44.47 | 1.03 \* | 0.15 tn | - | b |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a2b1 | 40.77 | - | - | - | a |
| 3.00 | 0.509 | a2b2 | 41.54 | 0.77 \* | - | - | b |
| 3.15 | 0.535 | a2b3 | 41.83 | 1.06 \* | 0.29 tn | - | b |
|  |  |  |  |  |  |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | **3** |
| - | - | a3b1 | 39.48 | - | - | - | a |
| 3.00 | 0.509 | a3b2 | 40.51 | 1.03 \* | - | - | b |
| 3.15 | 0.535 | a3b3 | 41.39 | 1.91 \* | 0.88 \* | - | c |

Faktor B yang sama A yang berbeda

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | | **3** |
| - | - | a3b1 | 39.48 | - | - | | - | a |
| 3.00 | 0.509 | a2b1 | 40.77 | 1.29 \* | - | | - | b |
| 3.15 | 0.535 | a1b1 | 44.32 | 4.84 \* | 3.56 \* | | - | c |
|  |  |  |  |  |  | |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | **2** | | **3** |
| - | - | a3b2 | 40.51 | - | - | | - | a |
| 3.00 | 0.509 | a2b2 | 41.54 | 1.03 \* | - | | - | b |
| 3.15 | 0.535 | a1b2 | 43.44 | 2.93 \* | 1.91 \* | | - | c |
|  |  |  |  |  |  | |  |  |
|  | | **Nilai Rata-rata** | | **Perlakuan** | | | | **Taraf Nyata 5%** |
| **SSR 5%** | **LSR 5%** | **1** | | **2** | **3** |
| - | - | a3b3 | 41.39 | - | | - | - | a |
| 3.00 | 0.509 | a2b3 | 41.83 | 0.44 tn | | - | - | a |
| 3.15 | 0.535 | a1b3 | 44.47 | 3.08 \* | | 2.64 \* | - | b |

Tabel 47. Pengaruh Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok terhadap Minuman Fungsional.

|  |  |  |  |
| --- | --- | --- | --- |
| **Perbandingan Sari (A)** | **KONSENTRASI MADU (B)** | | |
| **b1** | **b2** | **b3** |
| **a1** | C | C | B |
| 44.32 | 43.44 | 44.47 |
| b | a | c |
| **a2** | B | B | A |
| 40.77 | 41.54 | 41.83 |
| a | b | b |
| **a3** | A | A | A |
| 39.48 | 40.51 | 41.39 |
| a | b | c |

Keterangan : Nilai rata-rata perlakuan yang ditandai notasi huruf yang sama menunjukkan tidak berbeda nyata dan notasi huruf yang berbeda menunjukkan perbedaan yang nyata menurut uji lanjut duncan pada taraf nyata 5%. Notasi huruf kapital dibaca vertikal. Notasi huruf kecil dibaca horizontal.

**Lampiran 8. Pengujian Kadar Tanin**

**Penentuan kadar Tanin, metode Lowenthal – Procter ( Sudarmadji, 1984 )**

Sampel sebanyak 2 – 3 gram yang sudah ditimbang kemudian sampel dimasukan kedalam gelas kimia dan tambahkan 200 ml aquadest. Kemudian dipanaskan selama 30 menit. Dinginkan kemudian dimasukan kedalam labu ukur 250 ml lalu tanda bataskan. Kemudian disaring sebanyak 10 ml dan masukan kedalam labu ukur 100 ml ditambahka 5 ml gelatin, 10 ml NaCl dan 1 gram kaolin. Diamkan 10 menit kemudian tanda bataskan. Filtrat diambil sebanyak 10 ml dimasukan kedalam labu erlemeyer. Kemudian ditambahkan 50 ml aquadest dan 5 ml indigo karmin 10 ml lalu dititrasi dengan KMnO4 0,01 N catat volume KMnO4.

Standarisasi larutan KMnO4 dengan Na Oksalat.

Perhitungan :

1 ml KMnO4 0,1 N = 0,00416 g tanin.

Kadar tanin = × 100%

**Lampiran 8. Hasil Analisis Kadar Tanin Penelitian Utama**

Tabel 48. Data Analisis Kadar Tanin Pada Minuman Fungsional

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | **Kelompok Ulangan** | | | **Total** | **Rata-Rata** |
|
| **A** | **B** | **1** | **2** | **3** |
| DA | DA | DA | DA | DA |
| a1 (1:1) | b1 (5%) | 8.95 | 8.74 | 8.74 | 26.43 | 8.81 |
| b2 (10%) | 8.74 | 8.50 | 8.74 | 25.98 | 8.66 |
| b3 (15%) | 8.65 | 8.95 | 8.74 | 26.34 | 8.78 |
| Sub Total | | 26.34 | 26.19 | 26.22 | 78.75 | 26.25 |
| Rata-Rata | | 8.78 | 8.73 | 8.74 | 26.25 | 8.75 |
| a2 (1:2) | b1 (5%) | 8.52 | 8.52 | 8.30 | 25.34 | 8.45 |
| b2 (10%) | 8.30 | 7.86 | 8.08 | 24.24 | 8.08 |
| b3 (15%) | 8.30 | 7.42 | 8.30 | 24.02 | 8.01 |
| Sub Total | | 25.12 | 23.80 | 24.68 | 73.60 | 24.53 |
| Rata-Rata | | 8.37 | 7.93 | 8.23 | 24.53 | 8.18 |
| a3 (1:3) | b1 (5%) | 7.64 | 7.42 | 7.42 | 22.48 | 7.49 |
| b2 (10%) | 7.64 | 7.42 | 7.86 | 22.92 | 7.64 |
| b3 (15%) | 7.42 | 7.42 | 7.86 | 22.70 | 7.57 |
| Sub Total | | 22.70 | 22.26 | 23.14 | 68.10 | 22.70 |
| Rata-Rata | | 7.57 | 7.42 | 7.71 | 22.70 | 7.57 |
| Total | | 74.16 | 72.25 | 74.04 | 220.45 | 73.48 |
| Rata-Rata | | 8.24 | 8.03 | 8.23 | 24.49 | 8.16 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perbandingan Sari** | **Konsentrasi Madu** | | | **Jumlah** | **Rata-rata** |
| **b1** | **b2** | **b3** |
| **a1** | 26.43 | 25.98 | 26.34 | 78.75 | 26.25 |
| **a2** | 25.34 | 24.24 | 24.02 | 73.60 | 24.53 |
| **a3** | 22.48 | 22.92 | 22.70 | 68.10 | 22.70 |
| **Jumlah** | 74.25 | 73.14 | 73.06 | 220.45 | 73.48 |
| **Rata-Rata** | 24.75 | 24.38 | 24.35 | 73.48 | 24.49 |

Perhitungan Anava

* Faktor Koreksi (FK) = = = 1799,93
* JKT = [(a1b1)2+ …+ (a3b3)2] – FK

= [ (8,95)2 + … +(7,86) 2 ] – 1799,93

= 7,73

* JKK = – FK

= – 1799,93

= 0,25

* JK(a) = – FK

= – 1799,93

= 6,30

* JK(b) = – FK

= – 1799,93

= 0,10

* JK(ab) = – FK – JK(a) – JK(b)

= – 1799,93 - 6,30 - 0,10

= 0,31

* JKG = JKT – JKK – JK(a) – JK (b) – JK (ab)

= 7,73 - 0,25 - 6,30 - 0,10 - 0,31

= 0,76

**Tabel 49. HasilAnalisisVariansi (Anava)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.25 | 0.1272 | - |  |
| Perlakuan | 8 | 6.71 | 0.84 | - |  |
| Faktor A | 2 | 6.30 | 3.15 | 65.98 \* | 3.63 |
| Faktor B | 2 | 0.10 | 0.05 | 1.03 tn | 3.63 |
| Interaksi (AB) | 4 | 0.31 | 0.08 | 1.60 tn | 3.01 |
| Galat | 16 | 0.76 | 0.0478 |  |  |
| Total | 26 | 7.73 |  |  |  |

Keterangan : tn = tidak berbeda nyata

\* = Berbeda nyata

Kesimpulan :

Berdasarkan tabel analisis variansi (ANAVA), bahwa faktor A (perbandingan sari daun jambu biji dengan sari salak bongkok) berbeda nyata terhadap kadar tanin minuman fungsional *,* sehingga dilakukan uji lanjut Duncan sedangkan faktor B (konsentrasi madu) serta interaksi AB (perbandingan sari daun jambu biji dengan sari salak bongkok dan konsentrasi madu) tidak berbeda nyata terhadap kadar tanin minuman fungsional, sehingga tidak perlu dilakukan uji lanjut Duncan.

**Uji Jarak Duncan Untuk Kadar Tanin**

Uji Jarak Berganda Duncan Untuk Faktor Perbandingan Sari Daun Jambu Biji dengan Sari Salak Bongkok (A)

Standar Error (Sy) = = 0,0729

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | **Taraf Nyata 5%** |
| **1** | **2** | **3** |
| - | - | a3 | 7.567 | - | - | - | a |
| 3.00 | 0.219 | a2 | 8.178 | 0.611 \* | - | - | b |
| 3.15 | 0.229 | a1 | 8.750 | 1.183 \* | 0.572 \* | - | c |

**Lampiran 9. Analisis Sampel Terpilih dengan Antioksidan Metode DPPH (1,1 diphenyl-2,pirylhidrazil)**

Aktivitas radikal bebas dari sampel dan pembanding DPPH-nya ditentukan dengan nilai Ic 50, yaitu konsentrasi efektif larutan sampel yang dibutuhkan untuk menurunkan 50% intensitas penangkapan larutan blanko DPPH. Sebelumnya dilakukan penentuan panjang gelombang maksimum yang dilakukan terhadap larutan DPPH-nya dan metanol. Secara teoritis telah dijelaskan bahwa λ maksimum untuk larutan DPPH adalah 517 nm.

Perhitungan :

% Penangkapan radikal bebas = 

Pengukuran aktivitas antioksidan metode ini menggunakan prinsip spektrofotometri. Senyawa DPPH (dalam metanol) berwarna ungu tua (*deep violet*) terdeteksi pada panjang gelombang sinar tampak sekitar 517 nm. Suatu senyawa dapat dikatakan memiliki aktivitas antioksidan apabila senyawa tersebut mampu mendonorkan atom hidrogennya untuk berikatan dengan DPPH membentuk DPP Hidrazin, ditandai dengan hilangnya warna ungu (menjadi kuning pucat). Persamaan regresi kemudian didapat dari kurva standar tersebut. Persamaan regresi ini selanjutnya digunakan untuk mengetahui aktivitas antioksidan sampel dalam menangkap radikal bebas stabil DPPH.

Tabel 50. Hasil aktifitas antioksidan minuman fungsional

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Konsentrasi (ppm) | Nilai Aborbansi | | Nilai Penghambatan (%) | |
| Ke-1 | Ke- 2 | Ke-1 | Ke-2 |
| 0 | 0.863 | 0.862 | 0 | 0 |
| 40 | 0.803 | 0.802 | 6.952 | 6.961 |
| 80 | 0.777 | 0.777 | 9.965 | 9.861 |
| 120 | 0.705 | 0.704 | 18.308 | 18.329 |
| 160 | 0.673 | 0.672 | 22.016 | 22.042 |

|  |  |  |  |
| --- | --- | --- | --- |
| y | a | b | ppm |
| 50 | 0.1338 | 0.9270 | 366.764 |
| 50 | 0.1343 | 0.8701 | 365.822 |
| Rata-rata | | | 366.293 |

**Lampiran 10. Perhitungan Basis Minuman Fungsional = 500 mL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **BAHAN** | **PERSEN** | | **BERAT** |
| 1.  (a1b1)  1:1  5% | Sari daun jambu biji | x 95% = 47.5% | | x 500= 237.5 mL |
| Sari salak bongkok | x 95% = 47.5% | | x 500= 237.5 mL |
| Madu | 5% | | x 500= 25 mL |
|  | | | | |
| 2.  (a1b2)  1:1  10% | Sari daun jambu biji | x 90% = 45% | | x 500= 225 mL |
| Sari salak bongkok | x 90% = 45% | | x 500= 225 mL |
| Madu | 10% | | x 500= 50 mL |
|  | | | | |
| 3.  (a1b3)  1:1  15% | Sari daun jambu biji | x 85% = 42.50% | | x 500= 212.5 mL |
| Sari salak bongkok | x 85% = 42.50% | | x 500= 212.5 mL |
| Madu | 15% | | x 500 = 75 mL |
|  | | | | |
| 4.  (a2b1)  1:2  5% | Sari daun jambu biji | x 95% = 31.67% | | x 500= 158.35mL |
| Sari salak bongkok | x 95% = 63.33% | | x 500= 316.65mL |
| Madu | 5% | | x 500= 25 mL |
|  | | | | |
| 5.  (a2b2)  1:2  10% | Sari daun jambu biji | x 90% = 30% | x 500= 150 mL | |
| Sari salak bongkok | x 90% = 60% | x 500= 300 mL | |
| Madu | 10% | x 500= 50 mL | |
| 6.  (a2b3)  1:2  15% | Sari daun jambu biji | x 85% = 28.33% | x 500=141.65 mL | |
| Sari salak bongkok | x 85% = 56.67% | x 500=283.35 mL | |
| Madu | 15% | x 500 = 75 mL | |
|  | | | | |
| 7.  (a3b1)  1:3  5% | Sari daun jambu biji | x 95% = 23.75% | x 500=118.75 mL | |
| Sari salak bongkok | x 95% = 71.25% | x 500= 356.25 mL | |
| Madu | 5% | x 500 = 25 mL | |
|  | | | | |
| 8.  (a3b2)  1:3  10% | Sari daun jambu biji | x 90% = 22.50% | x 500= 112.5 mL | |
| Sari salak bongkok | x 90% = 67.50% | x 500= 337.5 mL | |
| Madu | 10% | x 500 = 50 mL | |
|  | | | | |
| 9.  (a3b3)  1:3  15% | Sari daun jambu biji | x 85% = 21.25% | x 500= 106.25mL | |
| Sari salak bongkok | x 85% = 63.75% | x 500= 318.75mL | |
| Madu | 15% | x 500 = 75 mL | |