**Lampiran 9. Hasil Pengamatan Utama Analisis Kimia**

1. **Analisis Kadar Air**

* Tabel Data Asli Nilai Rata-Rata Kadar Air Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 10.84 | 11.11 | 11.90 | **33.85** | **11.28** |
| **a1b2** | 11.00 | 12.00 | 10.45 | **33.45** | **11.15** |
| **a1b3** | 10.90 | 10.53 | 9.31 | **30.74** | **10.25** |
| **a2b1** | 11.54 | 9.57 | 8.53 | **29.64** | **9.88** |
| **a2b2** | 11.50 | 10.45 | 10.95 | **32.89** | **10.96** |
| **a2b3** | 10.48 | 11.50 | 10.00 | **31.98** | **10.66** |
| **a3b1** | 11.44 | 9.62 | 8.78 | **29.84** | **9.95** |
| **a3b2** | 8.82 | 8.96 | 8.53 | **26.31** | **8.77** |
| **a3b3** | 9.43 | 8.42 | 8.50 | **26.35** | **8.78** |
| **Total** | **95.95** | **92.14** | **86.95** | **275.05** | **91.68** |
| **Rata-rata** | **10.66** | **10.24** | **9.66** | **30.56** | **10.19** |

* Tabel Data Transformasi Nilai Rata-Rata Kadar Air Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 3.37 | 3.41 | 3.52 | **10.30** | **3.43** |
| **a1b2** | 3.39 | 3.54 | 3.31 | **10.24** | **3.41** |
| **a1b3** | 3.38 | 3.32 | 3.13 | **9.83** | **3.28** |
| **a2b1** | 3.47 | 3.17 | 3.01 | **9.65** | **3.22** |
| **a2b2** | 3.46 | 3.31 | 3.38 | **10.16** | **3.39** |
| **a2b3** | 3.31 | 3.46 | 3.24 | **10.02** | **3.34** |
| **a3b1** | 3.46 | 3.18 | 3.05 | **9.68** | **3.23** |
| **a3b2** | 3.05 | 3.07 | 3.01 | **9.13** | **3.04** |
| **a3b3** | 3.15 | 2.99 | 3.00 | **9.14** | **3.05** |
| **Total** | **30.04** | **29.45** | **28.64** | **88.14** | **29.38** |
| **Rata-rata** | **3.34** | **3.27** | **3.18** | **9.79** | **3.26** |

* Data Asli Nilai Rata-rata Kadar Air Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 10.84 | 11.00 | 10.90 | 11.54 | 11.50 | 10.48 | 11.44 | 8.82 | 9.43 | **95.95** |
| **2** | 11.11 | 12.00 | 10.53 | 9.57 | 10.45 | 11.50 | 9.62 | 8.96 | 8.42 | **92.14** |
| **3** | 11.90 | 10.45 | 9.31 | 8.53 | 10.95 | 10.00 | 8.78 | 8.53 | 8.50 | **86.95** |
| **Jumlah** | **33.85** | **33.45** | **30.74** | **29.64** | **32.89** | **31.98** | **29.84** | **26.31** | **26.35** | **275.05** |
| **Rata-rata** | **11.28** | **11.15** | **10.25** | **9.88** | **10.96** | **10.66** | **9.95** | **8.77** | **8.78** | **91.68** |

* Data Transformasi Nilai Rata-rata Kadar Air Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 3.37 | 3.39 | 3.38 | 3.47 | 3.46 | 3.31 | 3.46 | 3.05 | 3.15 | **30.04** |
| **2** | 3.41 | 3.54 | 3.32 | 3.17 | 3.31 | 3.46 | 3.18 | 3.07 | 2.99 | **29.45** |
| **3** | 3.52 | 3.31 | 3.13 | 3.01 | 3.38 | 3.24 | 3.05 | 3.01 | 3.00 | **28.64** |
| **Jumlah** | **10.30** | **10.24** | **9.83** | **9.65** | **10.16** | **10.02** | **9.68** | **9.13** | **9.14** | **88.14** |
| **Rata-rata** | **3.43** | **3.41** | **3.28** | **3.22** | **3.39** | **3.34** | **3.23** | **3.04** | **3.05** | **29.38** |

* Data Asli Perhitungan Kadar Air Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 10.84 | 11.00 | 10.90 | **32.74** | **10.91** |
| 2 | 11.11 | 12.00 | 10.53 | **33.64** | **11.21** |
| 3 | 11.90 | 10.45 | 9.31 | **31.67** | **10.56** |
| **Sub Total** | | **33.85** | **33.45** | **30.74** | **98.04** | **32.68** |
| **Rata-Rata Sub Total** | | **11.28** | **11.15** | **10.25** | **32.68** | **10.89** |
| a2 (Ubi Jalar) | 1 | 11.54 | 11.50 | 10.48 | **33.51** | **11.17** |
| 2 | 9.57 | 10.45 | 11.50 | **31.52** | **10.51** |
| 3 | 8.53 | 10.95 | 10.00 | **29.48** | **9.83** |
| **Sub Total** | | **29.64** | **32.89** | **31.98** | **94.51** | **31.50** |
| **Rata-Rata Sub Total** | | **9.88** | **10.96** | **10.66** | **31.50** | **10.50** |
| a3 (Talas) | 1 | 11.44 | 8.82 | 9.43 | **29.70** | **9.90** |
| 2 | 9.62 | 8.96 | 8.42 | **26.99** | **9.00** |
| 3 | 8.78 | 8.53 | 8.50 | **25.81** | **8.60** |
| **Sub Total** | | **29.84** | **26.31** | **26.35** | **82.50** | **27.50** |
| **Rata-Rata Sub Total** | | **9.95** | **8.77** | **8.78** | **27.50** | **9.17** |
| **Total** | | **93.33** | **92.65** | **89.07** | **275.05** | **91.68** |
| **Total Rata-Rata** | | **31.11** | **30.88** | **29.69** | **91.68** | **30.56** |

* Data Transformasi Perhitungan Kadar Air Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 3.37 | 3.39 | 3.38 | **10.13** | **3.38** |
| 2 | 3.41 | 3.54 | 3.32 | **10.26** | **3.42** |
| 3 | 3.52 | 3.31 | 3.13 | **9.96** | **3.32** |
| **Sub Total** | | **10.30** | **10.24** | **9.83** | **30.36** | **10.12** |
| **Rata-Rata Sub Total** | | **3.43** | **3.41** | **3.28** | **10.12** | **3.37** |
| a2 (Ubi Jalar) | 1 | 3.47 | 3.46 | 3.31 | **10.25** | **3.42** |
| 2 | 3.17 | 3.31 | 3.46 | **9.95** | **3.32** |
| 3 | 3.01 | 3.38 | 3.24 | **9.63** | **3.21** |
| **Sub Total** | | **9.65** | **10.16** | **10.02** | **29.82** | **9.94** |
| **Rata-Rata Sub Total** | | **3.22** | **3.39** | **3.34** | **9.94** | **3.31** |
| a3 (Talas) | 1 | 3.46 | 3.05 | 3.15 | **9.66** | **3.22** |
| 2 | 3.18 | 3.07 | 2.99 | **9.24** | **3.08** |
| 3 | 3.05 | 3.01 | 3.00 | **9.05** | **3.02** |
| **Sub Total** | | **9.68** | **9.13** | **9.14** | **27.95** | **9.32** |
| **Rata-Rata Sub Total** | | **3.23** | **3.04** | **3.05** | **9.32** | **3.11** |
| **Total** | | **29.63** | **29.52** | **28.99** | **88.14** | **29.38** |
| **Total Rata-Rata** | | **9.88** | **9.84** | **9.66** | **29.38** | **9.79** |

Perhitungan :

= (10,842 + 11,002 + ... + 8,502) – 2801,893

= 35,342

* Tabel Analisis Variansi (ANAVA)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 4.534 | 2.267 |  |  |
| Perlakuan | 8 | 21.276 | 2.659 |  |  |
| Faktor A | 2 | 14.753 | 7.376 | 12.382 \* | 3.63 |
| Faktor B | 2 | 1.166 | 0.583 | 0.979 tn | 3.63 |
| Interaksi AB | 4 | 5.357 | 1.339 | 2.248 tn | 3.01 |
| Galat | 16 | 9.532 | 0.596 |  |  |
| Total | 26 | 35.342 |  |  |  |

Keterangan : tn = Tidak Berbeda Nyata

\* = Berbeda Nyata

Kesimpulan :

Berdasarkan tabel anava diketahui bahwa F hitung ≥ F tabel pada taraf 5% maka dapat disimpulkan jenis tepung umbi (A) berpengaruh terhadap karakteristik beras analog, sehingga diberi tanda \* (berbeda nyata) maka perlu dilakukan uji lanjut duncan.

Sў = = = 0,446

LSR = Sў x SSR

* Tabel Uji Lanjut *Duncan* untuk Faktor A

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | | | | **Taraf Nyata 5%** |
| **1** | | **2** | | **3** | |
| - | - | a3 | 9.17 | - |  |  |  |  |  | a |
| 3.00 | 1.337 | a2 | 10.50 | 1.334 | tn | - |  |  |  | ab |
| 3.15 | 1.404 | a1 | 10.89 | 1.727 | \* | 0.393 | tn | - |  | b |

**2. Analisis Kadar Protein**

* Tabel Data Asli Nilai Rata-Rata Kadar Protein Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 13.48 | 13.95 | 13.22 | **40.65** | **13.55** |
| **a1b2** | 14.69 | 14.54 | 13.95 | **43.18** | **14.39** |
| **a1b3** | 14.09 | 15.57 | 14.40 | **44.07** | **14.69** |
| **a2b1** | 13.82 | 13.22 | 12.96 | **40.00** | **13.33** |
| **a2b2** | 14.69 | 13.95 | 14.27 | **42.90** | **14.30** |
| **a2b3** | 14.83 | 13.48 | 15.27 | **43.58** | **14.53** |
| **a3b1** | 14.83 | 13.82 | 14.54 | **43.19** | **14.40** |
| **a3b2** | 15.42 | 14.83 | 15.12 | **45.38** | **15.13** |
| **a3b3** | 15.27 | 15.42 | 16.00 | **46.69** | **15.56** |
| **Total** | **131.12** | **128.79** | **129.74** | **389.65** | **129.88** |
| **Rata-rata** | **14.57** | **14.31** | **14.42** | **43.29** | **14.43** |

* Tabel Data Transformasi Nilai Rata-Rata Kadar Protein Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 3.74 | 3.80 | 3.70 | **11.24** | **3.75** |
| **a1b2** | 3.90 | 3.88 | 3.80 | **11.58** | **3.86** |
| **a1b3** | 3.82 | 4.01 | 3.86 | **11.69** | **3.90** |
| **a2b1** | 3.78 | 3.70 | 3.67 | **11.16** | **3.72** |
| **a2b2** | 3.90 | 3.80 | 3.84 | **11.54** | **3.85** |
| **a2b3** | 3.92 | 3.74 | 3.97 | **11.63** | **3.88** |
| **a3b1** | 3.92 | 3.78 | 3.88 | **11.58** | **3.86** |
| **a3b2** | 3.99 | 3.92 | 3.95 | **11.86** | **3.95** |
| **a3b3** | 3.97 | 3.99 | 4.06 | **12.02** | **4.01** |
| **Total** | **34.93** | **34.62** | **34.74** | **104.29** | **34.76** |
| **Rata-rata** | **3.88** | **3.85** | **3.86** | **11.59** | **3.86** |

* Data Asli Nilai Rata-rata Kadar Protein Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 13.48 | 14.69 | 14.09 | 13.82 | 14.69 | 14.83 | 14.83 | 15.42 | 15.27 | **131.12** |
| **2** | 13.95 | 14.54 | 15.57 | 13.22 | 13.95 | 13.48 | 13.82 | 14.83 | 15.42 | **128.79** |
| **3** | 13.22 | 13.95 | 14.40 | 12.96 | 14.27 | 15.27 | 14.54 | 15.12 | 16.00 | **129.74** |
| **Jumlah** | **40.65** | **43.18** | **44.07** | **40.00** | **42.90** | **43.58** | **43.19** | **45.38** | **46.69** | **389.65** |
| **Rata-rata** | **13.55** | **14.39** | **14.69** | **13.33** | **14.30** | **14.53** | **14.40** | **15.13** | **15.56** | **129.88** |

* Data Transformasi Nilai Rata-rata Kadar Protein Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 3.74 | 3.90 | 3.82 | 3.78 | 3.90 | 3.92 | 3.92 | 3.99 | 3.97 | **34.93** |
| **2** | 3.80 | 3.88 | 4.01 | 3.70 | 3.80 | 3.74 | 3.78 | 3.92 | 3.99 | **34.62** |
| **3** | 3.70 | 3.80 | 3.86 | 3.67 | 3.84 | 3.97 | 3.88 | 3.95 | 4.06 | **34.74** |
| **Jumlah** | **11.24** | **11.58** | **11.69** | **11.16** | **11.54** | **11.63** | **11.58** | **11.86** | **12.02** | **104.29** |
| **Rata-rata** | **3.75** | **3.86** | **3.90** | **3.72** | **3.85** | **3.88** | **3.86** | **3.95** | **4.01** | **34.76** |

* Data Asli Hasil Perhitungan Kadar Protein Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 13.48 | 14.69 | 14.09 | **42.26** | **14.09** |
| 2 | 13.95 | 14.54 | 15.57 | **44.07** | **14.69** |
| 3 | 13.22 | 13.95 | 14.40 | **41.57** | **13.86** |
| **Sub Total** | | **40.65** | **43.18** | **44.07** | **127.90** | **42.63** |
| **Rata-Rata Sub Total** | | **13.55** | **14.39** | **14.69** | **42.63** | **14.21** |
| a2 (Ubi Jalar) | 1 | 13.82 | 14.69 | 14.83 | **43.33** | **14.44** |
| 2 | 13.22 | 13.95 | 13.48 | **40.65** | **13.55** |
| 3 | 12.96 | 14.27 | 15.27 | **42.50** | **14.17** |
| **Sub Total** | | **40.00** | **42.90** | **43.58** | **126.49** | **42.16** |
| **Rata-Rata Sub Total** | | **13.33** | **14.30** | **14.53** | **42.16** | **14.05** |
| a3 (Talas) | 1 | 14.83 | 15.42 | 15.27 | **45.52** | **15.17** |
| 2 | 13.82 | 14.83 | 15.42 | **44.07** | **14.69** |
| 3 | 14.54 | 15.12 | 16.00 | **45.67** | **15.22** |
| **Sub Total** | | **43.19** | **45.38** | **46.69** | **135.26** | **45.09** |
| **Rata-Rata Sub Total** | | **14.40** | **15.13** | **15.56** | **45.09** | **15.03** |
| **Total** | | **123.84** | **131.46** | **134.34** | **389.65** | **129.88** |
| **Total Rata-Rata** | | **41.28** | **43.82** | **44.78** | **129.88** | **43.29** |

* Data Transformasi Hasil Perhitungan Kadar Protein Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 3.74 | 3.90 | 3.82 | **11.46** | **3.82** |
| 2 | 3.80 | 3.88 | 4.01 | **11.69** | **3.90** |
| 3 | 3.70 | 3.80 | 3.86 | **11.37** | **3.79** |
| **Sub Total** | | **11.24** | **11.58** | **11.69** | **34.51** | **11.50** |
| **Rata-Rata Sub Total** | | **3.75** | **3.86** | **3.90** | **11.50** | **3.83** |
| a2 (Ubi Jalar) | 1 | 3.78 | 3.90 | 3.92 | **11.60** | **3.87** |
| 2 | 3.70 | 3.80 | 3.74 | **11.24** | **3.75** |
| 3 | 3.67 | 3.84 | 3.97 | **11.48** | **3.83** |
| **Sub Total** | | **11.16** | **11.54** | **11.63** | **34.32** | **11.44** |
| **Rata-Rata Sub Total** | | **3.72** | **3.85** | **3.88** | **11.44** | **3.81** |
| a3 (Talas) | 1 | 3.92 | 3.99 | 3.97 | **11.88** | **3.96** |
| 2 | 3.78 | 3.92 | 3.99 | **11.69** | **3.90** |
| 3 | 3.88 | 3.95 | 4.06 | **11.89** | **3.96** |
| **Sub Total** | | **11.58** | **11.86** | **12.02** | **35.46** | **11.82** |
| **Rata-Rata Sub Total** | | **3.86** | **3.95** | **4.01** | **11.82** | **3.94** |
| **Total** | | **33.98** | **34.98** | **35.34** | **104.29** | **34.76** |
| **Total Rata-Rata** | | **11.33** | **11.66** | **11.78** | **34.76** | **11.59** |

Perhitungan :

= (13,482 + 14,692 + ... + 16,002) –

= 16,734

* Tabel Analisis Variansi (ANAVA)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 0.304 | 0.152 |  |  |
| Perlakuan | 8 | 11.524 | 1.440 |  |  |
| Faktor A | 2 | 4.928 | 2.464 | 8.034 \* | 3.63 |
| Faktor B | 2 | 6.542 | 3.271 | 10.666 \* | 3.63 |
| Interaksi AB | 4 | 0.054 | 0.013 | 0.044 tn | 3.01 |
| Galat | 16 | 4.907 | 0.307 |  |  |
| Total | 26 | 16.734 |  |  |  |

Keterangan : tn = Tidak Berbeda Nyata

\* = Berbeda Nyata

Kesimpulan :

Berdasarkan tabel anava diketahui bahwa F hitung ≥ F tabel pada taraf 5% maka dapat disimpulkan jenis tepung umbi (A) dan konsentrasi tepung ikan lele (B) berpengaruh tehadap karakterstik beras analog, sehingga diberi tanda \*   
(berbeda nyata) maka perlu dilakukan uji lanjut *Duncan*.

Sў = = = 0,320

LSR = Sў x SSR

* Tabel Uji Lanjut *Duncan* untuk Faktor A

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | | | | **Taraf Nyata 5%** |
| **1** | | **2** | | **3** | |
| - | - | a2 | 14.05 | - |  |  |  |  |  | a |
| 3.00 | 0.959 | a1 | 14.21 | 0.157 | tn | - |  |  |  | a |
| 3.15 | 1.007 | a3 | 15.03 | 0.975 | \* | 0.817 | \* | - |  | b |

* Tabel Uji Lanjut *Duncan* untuk Faktor B

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SSR 5%** | **LSR 5%** | **Kode** | **Rata-rata** | **Perlakuan** | | | | | | **Taraf Nyata 5%** |
| **1** | | **2** | | **3** | |
| - | - | b1 | 41.28 | - |  |  |  |  |  | a |
| 3.00 | 0.959 | b2 | 43.82 | 2.541 | \* | - |  |  |  | b |
| 3.15 | 1.007 | b3 | 44.78 | 3.500 | \* | 0.959 | tn | - |  | b |

1. **Analisis Kadar Karbohidrat (Gula Total)**

* Tabel Data Asli Nilai Rata-Rata Kadar Protein Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 19.95 | 16.53 | 17.59 | **54.07** | **18.02** |
| **a1b2** | 18.90 | 18.81 | 18.82 | **56.53** | **18.84** |
| **a1b3** | 18.71 | 16.39 | 15.64 | **50.74** | **16.91** |
| **a2b1** | 20.83 | 19.75 | 20.93 | **61.52** | **20.51** |
| **a2b2** | 34.28 | 14.69 | 15.73 | **64.70** | **21.57** |
| **a2b3** | 27.18 | 15.49 | 18.71 | **61.38** | **20.46** |
| **a3b1** | 17.59 | 13.63 | 16.77 | **48.00** | **16.00** |
| **a3b2** | 20.01 | 15.69 | 17.67 | **53.38** | **17.79** |
| **a3b3** | 13.58 | 15.62 | 19.81 | **49.02** | **16.34** |
| **Total** | **191.03** | **146.61** | **161.68** | **499.33** | **166.44** |
| **Rata-rata** | **21.23** | **16.29** | **17.96** | **55.48** | **18.49** |

* Tabel Data Transformasi Nilai Rata-Rata Kadar Protein Penelitian Utama

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Perlakuan** | **Ulangan** | | | **Total** | **Rata-rata** |
| **1** | **2** | **3** |
| **a1b1** | 4.52 | 4.13 | 4.25 | **12.90** | **4.30** |
| **a1b2** | 4.40 | 4.39 | 4.40 | **13.19** | **4.40** |
| **a1b3** | 4.38 | 4.11 | 4.02 | **12.51** | **4.17** |
| **a2b1** | 4.62 | 4.50 | 4.63 | **13.75** | **4.58** |
| **a2b2** | 5.90 | 3.90 | 4.03 | **13.82** | **4.61** |
| **a2b3** | 5.26 | 4.00 | 4.38 | **13.64** | **4.55** |
| **a3b1** | 4.25 | 3.76 | 4.16 | **12.17** | **4.06** |
| **a3b2** | 4.53 | 4.02 | 4.26 | **12.82** | **4.27** |
| **a3b3** | 3.75 | 4.02 | 4.51 | **12.28** | **4.09** |
| **Total** | **41.62** | **36.83** | **38.63** | **117.08** | **39.03** |
| **Rata-rata** | **4.62** | **4.09** | **4.29** | **13.01** | **4.34** |

* Data Asli Nilai Rata-rata Kadar Protein Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 19.95 | 18.90 | 18.71 | 20.83 | 34.28 | 27.18 | 17.59 | 20.01 | 13.58 | **191.03** |
| **2** | 16.53 | 18.81 | 16.39 | 19.75 | 14.69 | 15.49 | 13.63 | 15.69 | 15.62 | **146.61** |
| **3** | 17.59 | 18.82 | 15.64 | 20.93 | 15.73 | 18.71 | 16.77 | 17.67 | 19.81 | **161.68** |
| **Jumlah** | **54.07** | **56.53** | **50.74** | **61.52** | **64.70** | **61.38** | **48.00** | **53.38** | **49.02** | **499.33** |
| **Rata-rata** | **18.02** | **18.84** | **16.91** | **20.51** | **21.57** | **20.46** | **16.00** | **17.79** | **16.34** | **166.44** |

* Data Transformasi Nilai Rata-rata Kadar Protein Beras Analog

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kelompok Ulangan** | **Perlakuan** | | | | | | | | | **Nilai Total** |
| **a1b1** | **a1b2** | **a1b3** | **a2b1** | **a2b2** | **a2b3** | **a3b1** | **a3b2** | **a3b3** |
| **1** | 4.52 | 4.40 | 4.38 | 4.62 | 5.90 | 5.26 | 4.25 | 4.53 | 3.75 | **41.62** |
| **2** | 4.13 | 4.39 | 4.11 | 4.50 | 3.90 | 4.00 | 3.76 | 4.02 | 4.02 | **36.83** |
| **3** | 4.25 | 4.40 | 4.02 | 4.63 | 4.03 | 4.38 | 4.16 | 4.26 | 4.51 | **38.63** |
| **Jumlah** | **12.90** | **13.19** | **12.51** | **13.75** | **13.82** | **13.64** | **12.17** | **12.82** | **12.28** | **117.08** |
| **Rata-rata** | **4.30** | **4.40** | **4.17** | **4.58** | **4.61** | **4.55** | **4.06** | **4.27** | **4.09** | **39.03** |

* Data Asli Hasil Perhitungan Kadar Protein Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 19.95 | 18.90 | 18.71 | **57.55** | **19.18** |
| 2 | 16.53 | 18.81 | 16.39 | **51.73** | **17.24** |
| 3 | 17.59 | 18.82 | 15.64 | **52.05** | **17.35** |
| **Sub Total** | | **54.07** | **56.53** | **50.74** | **161.34** | **53.78** |
| **Rata-Rata Sub Total** | | **18.02** | **18.84** | **16.91** | **53.78** | **17.93** |
| a2 (Ubi Jalar) | 1 | 20.83 | 34.28 | 27.18 | **82.29** | **27.43** |
| 2 | 19.75 | 14.69 | 15.49 | **49.94** | **16.65** |
| 3 | 20.93 | 15.73 | 18.71 | **55.37** | **18.46** |
| **Sub Total** | | **61.52** | **64.70** | **61.38** | **187.59** | **62.53** |
| **Rata-Rata Sub Total** | | **20.51** | **21.57** | **20.46** | **62.53** | **20.84** |
| a3 (Talas) | 1 | 17.59 | 20.01 | 13.58 | **51.19** | **17.06** |
| 2 | 13.63 | 15.69 | 15.62 | **44.94** | **14.98** |
| 3 | 16.77 | 17.67 | 19.81 | **54.26** | **18.09** |
| **Sub Total** | | **48.00** | **53.38** | **49.02** | **150.40** | **50.13** |
| **Rata-Rata Sub Total** | | **16.00** | **17.79** | **16.34** | **50.13** | **16.71** |
| **Total** | | **163.58** | **174.61** | **161.14** | **499.33** | **166.44** |
| **Total Rata-Rata** | | **54.53** | **58.20** | **53.71** | **166.44** | **55.48** |

* Data Transformasi Hasil Perhitungan Kadar Protein Beras Analog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Jenis Tepung Umbi** | **Kelompok** | **Konsentrasi Tepung Ikan Lele** | | | **Total** | **Rata-Rata** |
| b1 (7.5%) | b2 (10%) | b3 (12.5%) |
| a1 (Ubi Kayu) | 1 | 4.52 | 4.40 | 4.38 | **13.31** | **4.44** |
| 2 | 4.13 | 4.39 | 4.11 | **12.63** | **4.21** |
| 3 | 4.25 | 4.40 | 4.02 | **12.67** | **4.22** |
| **Sub Total** | | **12.90** | **13.19** | **12.51** | **38.61** | **12.87** |
| **Rata-Rata Sub Total** | | **4.30** | **4.40** | **4.17** | **12.87** | **4.29** |
| a2 (Ubi Jalar) | 1 | 4.62 | 5.90 | 5.26 | **15.78** | **5.26** |
| 2 | 4.50 | 3.90 | 4.00 | **12.40** | **4.13** |
| 3 | 4.63 | 4.03 | 4.38 | **13.04** | **4.35** |
| **Sub Total** | | **13.75** | **13.82** | **13.64** | **41.21** | **13.74** |
| **Rata-Rata Sub Total** | | **4.58** | **4.61** | **4.55** | **13.74** | **4.58** |
| a3 (Talas) | 1 | 4.25 | 4.53 | 3.75 | **12.54** | **4.18** |
| 2 | 3.76 | 4.02 | 4.02 | **11.80** | **3.93** |
| 3 | 4.16 | 4.26 | 4.51 | **12.93** | **4.31** |
| **Sub Total** | | **12.17** | **12.82** | **12.28** | **37.26** | **12.42** |
| **Rata-Rata Sub Total** | | **4.06** | **4.27** | **4.09** | **12.42** | **4.14** |
| **Total** | | **38.82** | **39.83** | **38.43** | **117.08** | **39.03** |
| **Total Rata-Rata** | | **12.94** | **13.28** | **12.81** | **39.03** | **13.01** |

Perhitungan :

= (19,952 + 18,902 + ... + 19,812) –

= 460,863

* Tabel Analisis Variansi (ANAVA)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sumber Variansi** | **dB** | **JK** | **KT** | **F Hitung** | **F Tabel 5%** |
| Kelompok | 2 | 113.402 | 56.701 |  |  |
| Perlakuan | 8 | 94.630 | 11.829 |  |  |
| Faktor A | 2 | 81.206 | 40.603 | 2.569 tn | 3.63 |
| Faktor B | 2 | 11.440 | 5.720 | 0.362 tn | 3.63 |
| Interaksi AB | 4 | 1.985 | 0.496 | 0.031 tn | 3.01 |
| Galat | 16 | 252.831 | 15.802 |  |  |
| Total | 26 | 460.863 |  |  |  |

Keterangan : tn = Tidak Berbeda Nyata

\* = Berbeda Nyata

Kesimpulan :

Berdasarkan tabel anava diketahui bahwa F hitung ≤ F tabel pada taraf 5% maka dapat disimpulkan jenis tepung umbi (A), konsentrasi tepung ikan lele (B) dan interaksi keduanya (AB) tidak berpengaruh tehadap karakterstik beras analog, sehingga diberi tanda tn (tidak berbeda nyata) maka tidak perlu dilakukan uji lanjut *Duncan*.