**UJI NORMALITAS UNTUK PARAMETER YANG DIUJIKAN**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Tests of Normality*** | | | | | | | |
|  | pH\_  SUHU | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| WAKTU\_  KOAGULASI | K1D1 | .175 | 3 | . | 1.000 | 3 | 1.000 |
| K1D2 | .253 | 3 | . | .964 | 3 | .637 |
| K1D3 | .175 | 3 | . | 1.000 | 3 | 1.000 |
| K2D1 | .219 | 3 | . | .987 | 3 | .780 |
| K2D2 | .225 | 3 | . | .984 | 3 | .756 |
| K2D3 | .349 | 3 | . | .832 | 3 | .194 |
| K3D1 | .219 | 3 | . | .987 | 3 | .780 |
| K3D2 | .286 | 3 | . | .930 | 3 | .490 |
| K3D3 | .204 | 3 | . | .993 | 3 | .843 |
| a. *Lilliefors Significance Correction* | | | | | | | |

* Hipotesis uji normalitas sebagai berikut:

H0 = Data berdistribusi normal

H1 = Data berdistribusi tidak normal

* Dengan pengambilan keputusan:

Sig > 0.05, maka H0 diterima

Sig < 0.05, maka H0 ditolak

* Dari uji normalitas diatas diketahui bahwa nilai signifikan setiap parameter >0.05 yang artinya H0 diterima dan data berdistribusi normal, maka selanjutnya akan dilakukan uji homogenitas.

**UJI HOMOGENITAS**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Test of Homogeneity of Variances*** | | | |
| WAKTU\_KOAGULASI | | | |
| Levene Statistic | df1 | df2 | Sig. |
| 2.305 | 8 | 18 | .067 |

* Hipotesis uji homogenitas sebagai berikut:

H0 = Data bersifat sama (homogen)

H1 = Data bersifat tidak sama (homogen)

* Dengan pengambilan keputusan:

Sig > 0.05, maka H0 diterima

Sig < 0.05, maka H0 ditolak

* Dari uji Homogenitas diatas diketahui bahwa nilai signifikan = 0.067 > 0.05 yang artinya H0 diterima dan data homogen.
* Jika data berdistribusi normal dan homogen maka akan diuji dengan Uji *Analisis of Varians* (ANOVA) dua arah (*two way*).

**UJI *ANALISIS OF VARIANS* (ANOVA) DUA ARAH *(TWO WAY)***

|  |  |  |  |
| --- | --- | --- | --- |
| ***Between-Subjects Factors*** | | | |
|  | | Value Label | N |
| pH\_SUHU | 1 | K1D1 | 3 |
| 2 | K1D2 | 3 |
| 3 | K1D3 | 3 |
| 4 | K2D1 | 3 |
| 5 | K2D2 | 3 |
| 6 | K2D3 | 3 |
| 7 | K3D1 | 3 |
| 8 | K3D2 | 3 |
| 9 | K3D3 | 3 |

|  |  |  |  |
| --- | --- | --- | --- |
| ***Descriptive Statistics*** | | | |
| Dependent Variable: WAKTU\_KOAGULASI | | | |
| pH\_SUHU | Mean | Std. Deviation | N |
| K1D1 | 37.00 | 2.000 | 3 |
| K1D2 | 46.67 | 3.055 | 3 |
| K1D3 | 26.00 | 4.000 | 3 |
| K2D1 | 58.67 | 2.517 | 3 |
| K2D2 | 76.33 | 9.074 | 3 |
| K2D3 | 19.33 | 4.933 | 3 |
| K3D1 | 42.33 | 2.517 | 3 |
| K3D2 | 98.00 | 9.849 | 3 |
| K3D3 | 32.67 | 3.512 | 3 |
| Total | 48.56 | 24.686 | 27 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Tests of Between-Subjects Effects*** | | | | | |
| Dependent Variable: Waktu\_Koagulasi | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | 15328.667a | 8 | 1916.083 | 66.840 | .000 |
| Intercept | 63656.333 | 1 | 63656.333 | 2220.570 | .000 |
| pH | 2118.222 | 2 | 1059.111 | 36.946 | .000 |
| Suhu | 10312.667 | 2 | 5156.333 | 179.872 | .000 |
| pH \* Suhu | 2897.778 | 4 | 724.444 | 25.271 | .000 |
| Error | 516.000 | 18 | 28.667 |  |  |
| Total | 79501.000 | 27 |  |  |  |
| Corrected Total | 15844.667 | 26 |  |  |  |
| a. R Squared = .967 (Adjusted R Squared = .953) | | | | | |

* Hipotesis uji *Analisis of Varians* (ANOVA) dua arah (*two way)* sebagai berikut:

H0 = Tidak ada perbedaan rata-rata hasil kecepatan koagulasi susu dengan penambahan enzim bromelin.

H1 = Ada perbedaan rata-rata hasil kecepatan koagulasi susu dengan penambahan enzim bromelin.

* Untuk menentukan H0 atau H1 yang diterima maka ketentuan yang harus diikuti adalah sebagai berikut:

1. Jika Fhitung > Ftabel maka H0 ditolak
2. Jika Fhitung < Ftabel maka H0 diterima
3. Jika signifikan atau probabilitas > 0.05, maka H0 diterima
4. Jika signifikan atau probabilitas < 0.05, maka H0 ditolak

* Berdasarkan pada hasil yang diperoleh pada uji ANOVA dua arah *(two way)*, dimana dilihat bahwa:

|  |  |  |  |
| --- | --- | --- | --- |
| F hitung pH = 36.946 | > | F tabel 1% = 6.01 | dan > F tabel 5% = 3.55 |
| F hitung suhu = 179.872 | > | F tabel 1% = 6.01 | dan > F tabel 5% = 3.55 |
| F hitung pH\*Suhu = 25.271 | > | F tabel 1% = 4.58 | dan > F tabel 5% = 2.93 |

**Yang berarti H0 ditolak dan H1 diterima**

* Sedangkan untuk nilai signifikan atau probabilitas dapat dilihat bahwa:

|  |  |
| --- | --- |
| Nilai sig pH | = 0.000 < 0.05 |
| Nilai sig suhu | = 0.000 < 0.05 |
| Nilai sig pH\*Suhu | = 0.000 < 0.05 |

**Yang berarti H0 ditolak dan H1 diterima**

* Hal ini menunjukkan bahwa ada perbedaan rata-rata kecepatan koagulasi susu dengan penambahan enzim bromelin. Variasi pH dan suhu mempunyai pengaruh terhadap kecepatan koagulasi susu.

**UJI JARAK BERGANDA *DUNCAN* / DMRT (*DUNCAN’S MULTIPLE RANGE TEST*)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Waktu\_Koagulasi** | | | | |
| Duncana,b | | | | |
| pH | N | Subset | | |
| 1 | 2 | 3 |
| K1 | 9 | 36.56 |  |  |
| K2 | 9 |  | 51.44 |  |
| K3 | 9 |  |  | 57.67 |
| Sig. |  | 1.000 | 1.000 | 1.000 |
| *Means for groups in homogeneous subsets are displayed.*  *Based on observed means.*  *The error term is Mean Square*(Error) = 28.667. | | | | |
| a. *Uses Harmonic Mean Sample Size* = 9.000. | | | | |
| b. *Alpha* = 0.05. | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Waktu\_Koagulasi** | | | | |
| Duncana,b | | | | |
| Suhu | N | Subset | | |
| 1 | 2 | 3 |
| D3 | 9 | 26.00 |  |  |
| D1 | 9 |  | 46.00 |  |
| D2 | 9 |  |  | 73.67 |
| Sig. |  | 1.000 | 1.000 | 1.000 |
| *Means for groups in homogeneous subsets are displayed.*  *Based on observed means.*  *The error term is Mean Square*(Error) = 28.667. | | | | |
| a. *Uses Harmonic Mean Sample Size* = 9.000. | | | | |
| b. *Alpha* = 0.05. | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **WAKTU\_KOAGULASI** | | | | | | | | | |
| Duncana,b | | | | | | | | | |
| pH\_SUHU | N | Subset | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| K2D3 | 3 | 19.33 |  |  |  |  |  |  |  | |
| K1D3 | 3 | 26.00 | 26.00 |  |  |  |  |  |  | |
| K3D3 | 3 |  | 32.67 | 32.67 |  |  |  |  |  | |
| K1D1 | 3 |  |  | 37.00 | 37.00 |  |  |  |  | |
| K3D1 | 3 |  |  |  | 42.33 | 42.33 |  |  |  | |
| K1D2 | 3 |  |  |  |  | 46.67 |  |  |  | |
| K2D1 | 3 |  |  |  |  |  | 58.67 |  |  | |
| K2D2 | 3 |  |  |  |  |  |  | 76.33 |  | |
| K3D2 | 3 |  |  |  |  |  |  |  | 98.00 | |
| Sig. |  | .145 | .145 | .335 | .238 | .335 | 1.000 | 1.000 | 1.000 | |
| *Means for groups in homogeneous subsets are displayed.*  *Based on observed means.*  *The error term is Mean Square*(Error) = 28.667. | | | | | | | | | |
| a. *Uses Harmonic Mean Sample Size* = 3.000. | | | | | | | | | |
| b. *Alpha* = .05. | | | | | | | | | |