LAMPIRAN 1a. Analisa Data Protein Sebelum Inokulasi

Descriptives

PRO_SBLM

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
kontrol	2	49,9015	1,23532	,87350	38,8026	61,0004	49,03	50,78
Ark A	2	49,2000	,00000	,00000	49,2000	49,2000	49,20	49,20
Artk B	2	52,0850	,61518	,43500	46,5578	57,6122	51,65	52,52
Ark C	2	53,4900	1,11723	,79000	43,4521	63,5279	52,70	54,28
Ark D	2	40,2700	2,47487	1,75000	18,0341	62,5059	38,52	42,02
Total	10	48,9893	4,97508	1,57326	45,4303	52,5483	38,52	54,28

ANOVA

PRO_SBLM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	213,485	4	53,371	28,763	,001
Within Groups	9,278	5	1,856		
Total	222,762	9			

PRO_SBLM

Duncan[a]

PERLAK	N	Subset for alpha = .05		
		1	2	3
Ark D	2	40,2700		
Ark A	2		49,2000	
kontrol	2		49,9015	49,9015
Artk B	2		52,0850	52,0850
Ark C	2			53,4900
Sig.		1,000	,095	,051

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRO_SBLM	,303	10	,010	,839	10	,042

a. Lilliefors Significance Correction

LAMPIRAN 1b. Analisa Data Sesudah Inokulasi

Descriptives

PRO_SSD

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
kontrol	2	22,7600	2,47487	1,75000	,5241	44,9959	21,01	24,51
Ark A	2	35,0150	2,48194	1,75500	12,7156	57,3144	33,26	36,77
Artk B	2	41,1400	1,23037	,87000	30,0856	52,1944	40,27	42,01
Ark C	2	44,6450	1,23744	,87500	33,5271	55,7629	43,77	45,52
Ark D	2	35,8900	6,19426	4,38000	-19,7632	91,5432	31,51	40,27
Total	10	35,8900	8,22225	2,60010	30,0082	41,7718	21,01	45,52

ANOVA

PRO_SSD

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	554,750	4	138,688	12,913	,008
Within Groups	53,699	5	10,740		
Total	608,449	9			

PRO_SSD

Duncan[a]

PERLAK_	N	Subset for alpha = .05		
		1	2	3
kontrol	2	22,7600		
Ark A	2		35,0150	
Ark D	2		35,8900	
Artk B	2		41,1400	41,1400
Ark C	2			44,6450
Sig.		1,000	,129	,334

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRO_SSD	,203	10	,200*	,919	10	,350

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

LAMPIRAN 1c. Analisa Data Protein Sel Tunggal

Descriptives

PRO_PST

	N	Mean	Std. Deviation	Std. Error	5% Confidence Interval fo Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
kontrol	2	54,7100	3,09713	2,19000	26,8834	82,5366	52,52	56,90
Ark A	2	41,5800	3,09713	2,19000	13,7534	69,4066	39,39	43,77
Artk B	2	38,5150	1,23744	,87500	27,3971	49,6329	37,64	39,39
Ark C	2	34,1350	1,23744	,87500	23,0171	45,2529	33,26	35,01
Ark D	2	28,8850	2,48194	1,75500	6,5856	51,1844	27,13	30,64
Total	10	39,5650	9,33672	2,95253	32,8859	46,2441	27,13	56,90

ANOVA

PRO_PST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	756,162	4	189,041	33,274	,001
Within Groups	28,407	5	5,681		
Total	784,569	9			

PRO_PST

Duncan[a]

PERLAK_	N	Subset for alpha = .05			
		1	2	3	4
Ark D	2	28,8850			
Ark C	2	34,1350	34,1350		
Artk B	2		38,5150	38,5150	
Ark A	2			41,5800	
kontrol	2				54,7100
Sig.		,079	,126	,255	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRO_PST	,207	10	,200*	,939	10	,539

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

LAMPIRAN 2. Analisa Korelasi Protein Sel Tunggal

Correlations

		MEDIA	PRO_AWL	PRO_INOK	PRO_CHLO
MEDIA	Pearson Correlation	1.000	-.449	.651*	-.944**
	Sig. (2-tailed)	.	.193	.042	.000
	N	10	10	10	10
PRO_AWL	Pearson Correlation	-.449	1.000	.268	.382
	Sig. (2-tailed)	.193	.	.454	.277
	N	10	10	10	10
PRO_INOK	Pearson Correlation	.651*	.268	1.000	-.712*
	Sig. (2-tailed)	.042	.454	.	.021
	N	10	10	10	10
PRO_CHLO	Pearson Correlation	-.944**	.382	-.712*	1.000
	Sig. (2-tailed)	.000	.277	.021	.
	N	10	10	10	10

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

LAMPIRAN 3. Perhitungan Laju Pertumbuhan Spesifik

Y kontrol = fase stationer 0-6

Y_6 $0{,}0006.6^3-0{,}0305.6^2+0{,}3975.6+5{,}5426$ $Y_0 = 0{,}0006.0^3-0{,}0305.0^2+0{,}3975.0+5{,}5426$

$=0{,}1296-1{,}098+2{,}385+5{,}5426 = 6{,}9592$ $= 5{,}5426$

$$\text{Y kontrol } (\mu) = \frac{\ln y_6 - \ln y_0}{6} = \frac{\ln 6{,}2204 - \ln 5{,}5426}{6} = \frac{1{,}940-1{,}712}{6}$$

$= 0{,}038 \times 24$ jam = **0,912 sel/ jam**

$$dt = \frac{\ln 2}{\mu} = \frac{0{,}693}{0{,}912} \times 24 \text{ jam} = \textbf{18,23 jam}$$

Y ARK A= fase stationer 0-7

$Y_7 = 0{,}0022.7^3-0{,}0734.7^2+0{,}7146.7+5{,}4375$ $Y_0 = 0{,}0022.0^3-0{,}0734.0^2+0{,}7146.0+5{,}4375$

$=0{,}7546-3{,}5966+5{,}0022+5{,}4375 = 7,,5977$ $= 5{,}4375$

$$\text{Y ARK A } (\mu) = \frac{\ln y_7 - \ln y_0}{7} = \frac{\ln 7{,}5977 - \ln 5.4375}{7} = \frac{2{,}027-1{,}693}{7}$$

$= 0{,}047 \times 24$ jam = **1,125 sel/ jam**

$$dt = \frac{\ln 2}{\mu} = \frac{0{,}693}{1{,}125} \times 24 \text{ jam} = \textbf{14,784 jam}$$

Y ARK B= fase stationer 0-7

$Y_7 = 0{,}0023.7^3-0{,}0764.7^2+0{,}7051.7+5{,}5672$ $Y_0 = 0{,}0023.0^3-0{,}0764.0^2+0{,}7051.0+5{,}5672$

$=0{,}7889-3{,}7436+4{,}9357+5{,}5672 = 7{,}5482$ $= 5{,}5672$

$$\text{Y ARK B } (\mu) = \frac{\ln y_7 - \ln y_0}{7} = \frac{\ln 7{,}5482 - \ln 5{,}5672}{7} = \frac{2{,}021 - 1{,}716}{7}$$

$=0{,}043 \times 24$ jam = **1,032 sel/ jam**

$$dt = \frac{\ln 2}{\mu} = \frac{0{,}693}{1{,}032} \times 24 \text{ jam} = \textbf{16,11 jam}$$

Y ARK C= fase stationer 0-7

Y_7=0,0004.7^4-0,0127.7^3+0,0974.7^2–0,0574.7+6,6196

=0,9604-4,3561+4,7726-0,344+ 6,6196= 7,6525

Y_0= 0,0004.0^4-0,0127.0^3+0,0974.0^2–0,0574.0+6,6196

= 6,6196

$$\text{Y ARK C } (\mu) = \frac{\ln y_7 - \ln y_0}{7} = \frac{\ln 7{,}6525 - \ln 6{,}6196}{7} = \frac{2{,}035 - 1{,}890}{7}$$

= 0.020x 24 jam = **0,48 sel/ jam**

$$dt = \frac{\ln 2}{\mu} = \frac{0{,}693}{0{,}48} \text{ X 24 jam} = \textbf{34,65 jam}$$

Y ARK D= fase stationer 0-5

Y_5=0,0001.5^4-0,0033.5^3+0,0183.5^2+0,0673.5+6,5082

= 6,9522

Y_0= 0,0001.0^4-0,0033.0^3+0,0183.0^2+0,0673.0+6,5082

= 6,5082

$$\text{Y ARK D } (\mu) = \frac{\ln y_5 - \ln y_0}{5} = \frac{\ln 6{,}9522 - \ln 6{,}5082}{5} = \frac{1{,}939 - 1{,}873}{5}$$

= 0.0132x 24 jam = **0,3168 sel/ jam**

$$dt = \frac{\ln 2}{\mu} = \frac{0{,}693}{0{,}3168} \text{ X 24 jam} = \textbf{52,5 jam}$$

LAMPIRAN 4. Perhitungan Data Protein Sebelum Inokulasi

Menurut Sudarmadji, 1997 $\sum N = \frac{(\text{ml HCl b–ml HCl s}) \times N\ HCl \times 14{,}008 \times 100\%}{\text{ml larutan sampel}}$

% Protein = jml N total X 6,25

Media Kontrol 1 $\sum N = \frac{(3{,}9\text{-}1{,}1) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 7{,}844\ \%$

% Protein = 7,844 x 6,25 = 49,028%

Media Kontrol 2 $\sum N = \frac{(3{,}9\text{-}1{,}0) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 8.124\ \%$

% Protein = 8.124 x 6,25 = 50.775%

Media ARK A1 $\sum N = \frac{(3{,}9\text{-}1{,}09) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 7.87\ \%$

% Protein = 7,87x 6,25 = 49,2%

Media ARK A2 $\sum N = \frac{(3{,}9\text{-}1{,}09) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 7{,}87\ \%$

% Protein = 7,87 x 6,25 = 49,2%

Media ARK B1 $\sum N = \frac{(3{,}9\text{-}0{,}9) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 8.4048\ \%$

% Protein = 8.4048 x 6,25 = 52.52%

Media ARK B2 $\sum N = \frac{(3{,}9\text{-}0{,}95) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 8.264\ \%$

% Protein = 8.264 x 6,25 = 51.65%

Media ARK C1 $\sum N = \frac{(3{,}9\text{-}0{,}8) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 8.684\ \%$

% Protein = 8.684 x 6,25 = 54.28%

Media ARK C 2 $\sum$ N = $\frac{(3,9-0,89) \times 0,02 \times 14,008 \times 100\%}{10}$ = 8,432 %

% Protein = 8.432 x 6,25 = 52.70%

Media ARK D1$\sum$ N = $\frac{(3,9-1,5) \times 0,02 \times 14,008 \times 100\%}{10}$ = 6.723 %

% Protein = 6.723 x 6,25 = 42.02%

Media ARK D2 $\sum$ N = $\frac{(3,9-1,7) \times 0,02 \times 14,008 \times 100\%}{10}$ = 6.163 %

% Protein = 6.163x 6,25 = 38.52%

LAMPIRAN 5. Perhitungan Data Protein Sesudah Inokulasi

Menurut Sudarmadji, 1997 $\sum N = \frac{(\text{ml HCl b–ml HCl s}) \times N\ HCl \times 14{,}008 \times 100\%}{\text{ml larutan sampel}}$

% Protein = jml N total X 6,25

Media Kontrol 1 $\sum N = \frac{(11\text{-}9{,}6) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 3.922\ \%$

% Protein = 3.922x 6,25 = 24.51%

Media Kontrol 2 $\sum N = \frac{(11\text{-}9.8) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 3.36\ \%$

% Protein = 3.36 x 6,25 = 21.012%

Media ARK A1 $\sum N = \frac{(11\text{-}9.1) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 5.232\ \%$

% Protein = 5.232x 6,25 = 33.26%

Media ARK A2 $\sum N = \frac{(11\text{-}8.9) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 5.883\ \%$

% Protein = 5.883 x 6,25 = 36.77%

Media ARK B1 $\sum N = \frac{(11\text{-}8.6) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 6.723\ \%$

% Protein = 6.723 x 6,25 = 42.018%

Media ARK B2 $\sum N = \frac{(11\text{-}8.7) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 6.443\ \%$

% Protein = 6.443 x 6,25 = 40.273%

Media ARK C1 $\sum N = \frac{(11\text{-}8.5) \times 0{,}02 \times 14{,}008 \times 100\%}{10} = 7.004\ \%$

% Protein = 7.004 x 6,25 = 43.775%

Media ARK C 2 ∑ N = $\frac{(11-8.4) \times 0{,}02 \times 14{,}008 \times 100\%}{10}$ =7.284 %

% Protein = 7.284 x 6,25 = 45.52%

Media ARK D1∑ N = $\frac{(11-8.7) \times 0{,}02 \times 14{,}008 \times 100\%}{10}$ = 6.443 %

% Protein = 6.443 x 6,25 = 40.273%

Media ARK D2 ∑ N = $\frac{(11-9.2) \times 0{,}02 \times 14{,}008 \times 100\%}{10}$ = 5.042 %

% Protein = 5.042x 6,25 = 31.51%

LAMPIRAN 6. Perhitungan Data Protein *Chlorella*

Menurut Apriyantono, 1989 $\sum N = \frac{\text{(ml NaOHb–ml NaOH s) x N HCl x 14,007 x 100\%}}{\text{ml larutan sampel}}$

% Protein = jml N total X 6,25

Media Kontrol 1 $\sum N = \frac{(15-14.35) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 9.10\ \%$

% Protein = 9.10 x 6,25 = 56.9%

Media Kontrol 2 $\sum N = \frac{(15-14.4) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 8.4042\ \%$

% Protein = 8.4042 x 6,25 = 52.52%

Media ARK A1 $\sum N = \frac{(15-14.5) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 7.0035\ \%$

% Protein = 7.0035x 6,25 = 43.77%

Media ARK A2 $\sum N = \frac{(15-14.55) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 6.303\ \%$

% Protein = 6.303 x 6,25 = 39.39%

Media ARK B1 $\sum N = \frac{(15-14.57) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 6.023\ \%$

% Protein = 6.023x 6,25 = 37.64%

Media ARK B2 $\sum N = \frac{(15-14.55) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 6.303\ \%$

% Protein = 6.023x 6,25 = 39.39%

Media ARK C1 $\sum N = \frac{(15-14.62) \times 0{,}1 \times 14{,}007 \times 100\%}{10} = 5.322\ \%$

% Protein =5.322 x 6,25 =33.26%

Media ARK C 2 ∑ N = $\frac{(15-14.6) \times 0,1 \times 14,007 \times 100\%}{10}$ = 5.602 %

% Protein =5.602 x 6,25 = 35.017%

Media ARK D1∑ N = $\frac{(15-14.7) \times 0,1 \times 14,007 \times 100\%}{10}$ = 4.902 %

% Protein =4.902 x 6,25 = 30.64%

Media ARK D2 ∑ N = $\frac{(15-14.69) \times 0,1 \times 14,007 \times 100\%}{10}$ = 4.342 %

% Protein = 4.342 x 6,25 = 27.13%