BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan penelitian dapat disimpulkan :

Pada campuran bahan pengisi laktosa 184,941 mg dan bahan penghancur explotab® 15,059 mg memberikan formula yang optimal pada sifat fisik granul dan menghasilkan kapsul lendir bekicot yang memenuhi persyaratan uji sifat fisik kapsul.

B. Saran

Perlu diadakan penelitian lebih lanjut dalam optimasi kapsul lendir bekicot dengan menggunakan bahan tambahan lain untuk mengetahui pengaruhnya terhadap mutu fisik kapsul dan menggunakan bahan pengikat yang lain selain PVP.

Perlu dilakukan penelitian lebih lanjut dengan menggunakan metode optimasi yang lain(*Factorial Design*) terhadap campuran laktosa dan explotab® pada pembuatan kapsul lendir bekicot.

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Lampiran 1. Perhitungan dosis lendir bekicot

Penelitian terdahulu menyatakan bahwa dosis optimum lendir bekicot untuk antinflamasi adalah 23,72 mg/KgBB (Tripurnomorini *et al*. 2000). Dosis tersebut jika dikonversikan ke dosis manusia adalah sebagai berikut :

Diketahui :

Dosis lendir bekicot 23,72 mg/kgBB mencit

Faktor konversi dosis manusia (70 kg) = 387,9

Dosis optimum untuk mencit (20 gram) = 23,72 mg/kg X 0,02 kg

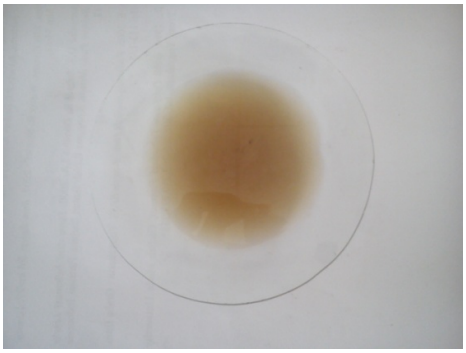
= 0,4744 mg

Dosis optim um untuk manusia (70 kg) = 0,4744 mg x 387,9

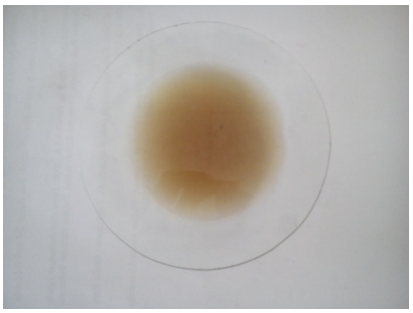
= 184,00 mg

Lampiran 2. Foto bekicot dan lendir bekicot

Foto lendir bekicot.



Lampiran 3. Foto bahan dan alat



Lendir bekicot

Alat uji Waktu hancur

Mortir dan stemper

Mesin pencetak tablet

Timbangan

Alat uji waktu alir

Alat uji daya serap air

Lampiran 4. Foto granul lendir bekicot

Formula I

Formula II

Formula III

Formula IV

Formula V

Formula optimum

Lampiran 5. Foto kapsul lendir bekicot

Formula I

Formula IV

Formula II

Formula V

Formula III

Formula optimum

Lampiran 6. Formula kapsul lendir bekicot

Komposisi	Berat bahan (mg)				
	Formula I	Formula II	Formula III	Formula IV	Formula V
Lendir bekicot + aerosil	284	284	284	284	284
Laktosa	196	192	188	184	180
Explotab®	4	8	12	16	20
PVP	12	12	12	12	12
Mg stearat	4	4	4	4	4
Berat kapsul	500	500	500	500	500

Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 7. Data uji waktu alir granul lendir bekicot

Waktu alir granul lendir bekicot					
No	Waktu alir (detik)				
	F I	F II	F III	F IV	F V
1	5,99	6,08	6,36	6,76	6,82
2	6,22	6,31	6,52	6,12	6,53
3	5,78	6,02	6,48	6,52	6,73
$\bar{x}$	5,996	6,136	6,453	6,466	6,693
SD	0,220	0,153	0,083	0,323	0,1484

Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 8. Data uji waktu hancur granul lendir bekicot

Waktu hancur granul lendir bekicot					
No	Waktu hancur (menit)				
	F I	F II	F III	F IV	F V
1	2,36	2,23	2,04	1,59	1,53
2	2,39	2,25	2,06	2,01	1,52
3	2,37	2,3	2,01	2,05	1,54
$\bar{x}$	2,37	2,26	2,036	1,883	1,53
SD	0,0152	0,0360	0,025	0,2548	0.01

Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 9. Data uji daya serap air granul lendir bekicot

	Daya serap air granul lendir bekicot				
No	Daya serap air (gram/menit)				
	F I	F II	F III	F IV	F V
1	0,04	0,043	0,059	0,062	0,066
2	0,04	0,045	0,053	0,06	0,056
3	0,042	0,047	0,055	0,062	0,065
$\bar{x}$	0,040	0,045	0,055	0,061	0,062
SD	0,0011	0,002	0,003	0,0011	0,0055

Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 10. Uji keseragaman bobot formula optimum kapsul lendir bekicot

Kapsul	Keseragaman bobot (mg)	Penyimpangan (%)
1	490	0,49
2	497	0.92
3	495	0,51
4	489	0,70
5	493	0,111
6	496	0,72
7	491	0,294
8	487	1,10
9	488	0.90
10	490	0,49
11	498	1,12
12	497	0,92
13	489	0,70
14	498	1,12
15	487	1,106
16	488	0,90
17	491	0,294
18	494	0,314
19	496	0,72
20	495	0,51
Jumlah	9849	13,942
Rata-rata	492,45	0,6973
SD	3,8590	0,31178
CV %	0,78	

Dari data perhitungan keseragaman bobot kapsul didapatkan nilai CV kurang dari 5 % sehingga formula optimum memenuhi standar keseragaman bobot kapsul.

Perhitungan penyimpangan bobot kapsul optimum

Kolom A (7,5%)

$\frac{7,5}{100}\ x\ 492,45\ mg$ = 36,93375 mg

Range bobot kapsul = 455,516 - 529,38375

Kolom B (15 %)

$\frac{15}{100}\ x\ 492,45\ mg$ = 73,8675

Range bobot kapsul = 418,5825 – 566,3175

Perhitungan koefisien variasi

$$CV = \frac{SD}{Bobot\ rata{-}rata\ kapsul} \text{ x } 100\ \%$$

$$= \frac{3,8590}{492,45} \text{ x } 100\ \%$$

$$= 0,78\ \%$$

Data uji keseragaman bobot kapsul sesuai dengan range bobot kapsul yang dipersyaratkan jadi formula optimum memenuhi syarat uji keseragaman bobot.

Contoh perhitungan penyimpangan bobt kapsul masing masing.

$$\text{Penyimpangan (\%)} = \left[\frac{\text{bobot rata-rata-bobot kapsul}}{\text{bobot rata-rata kapsul}}\right] \text{x } 100\ \%$$

$$= \left[\frac{492,45-490}{492,45}\right] \text{x } 100\ \%$$

$$= 0,49\ \%$$

Lampiran 11. Uji waktu alir,daya serap air dan waktu hancur formula optimum kapsul lendir bekicot.

Lampiran 11.a. Uji waktu alir kapsul formula optimum

No	Waktu alir (g/detik)
1	6,59
2	6,60
3	6,61
$\bar{x}$	6,6
SD	0,01

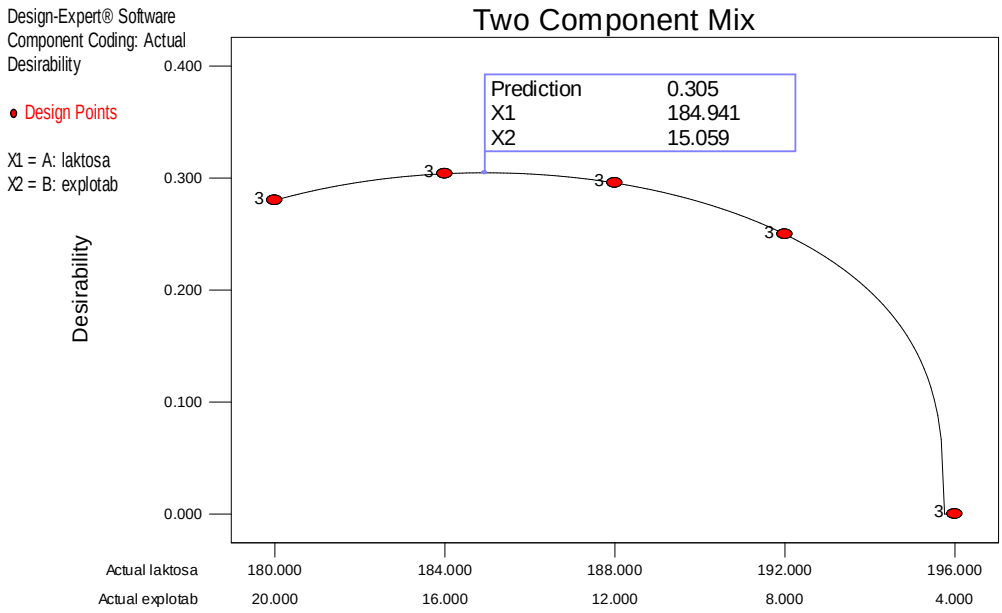
Lampiran 11b. Uji waktu hancur kapsul formula optimum

No	Waktu hancur (menit)
1	1,99
2	1,79
3	1,80
$\bar{x}$	1,86
SD	0,112

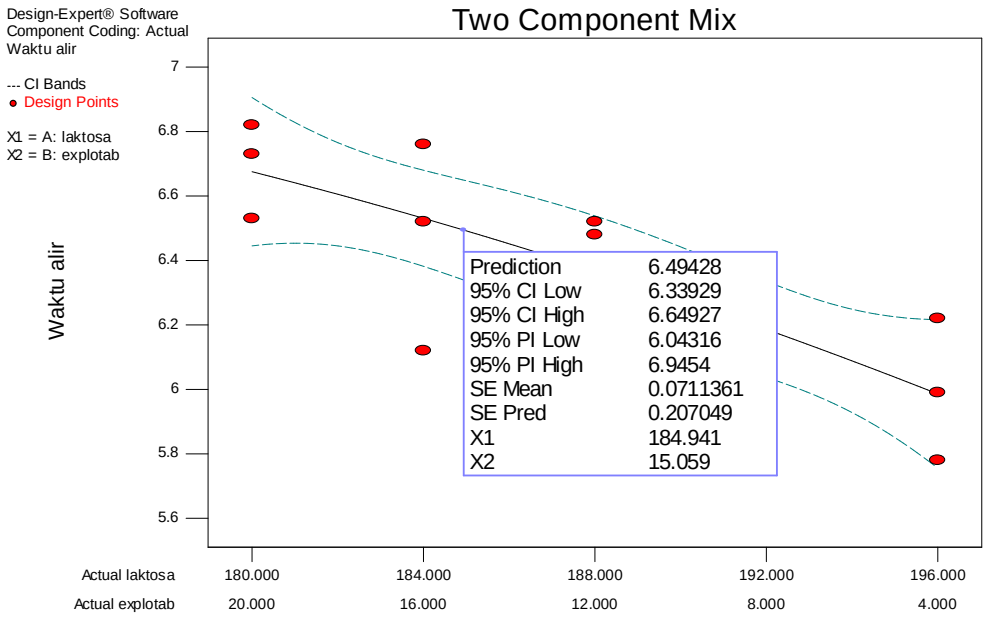
Lampiran 11c. Uji daya serap air kapsul formula optimum

No	Daya serap air (gram /menit)
1	0,059
2	0,057
3	0,060
$\bar{x}$	0.058
SD	0.0015

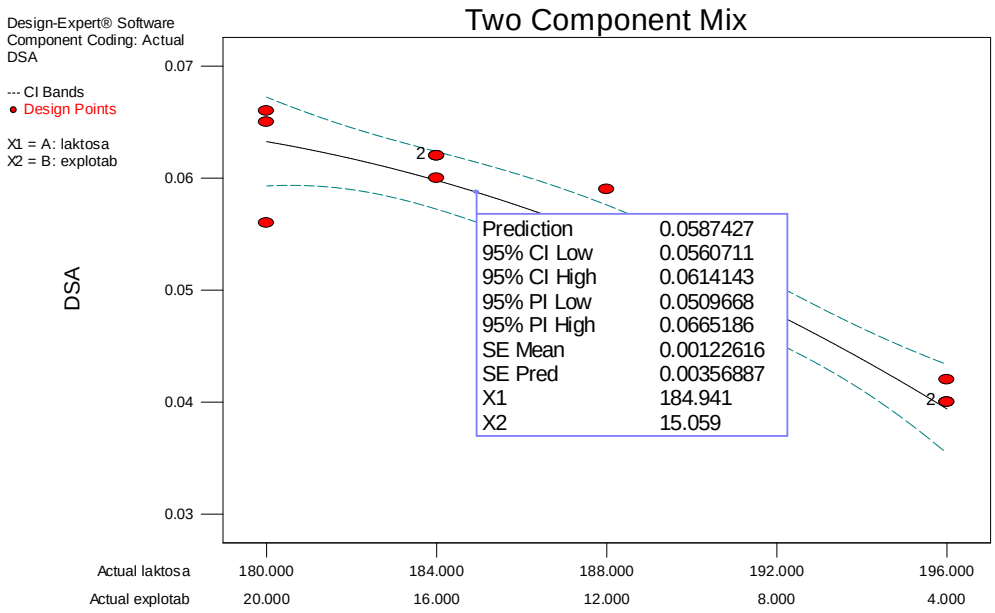
Lampiran 12. Grafik formula optimum antara laktosa dan explotab® dengan pendekatan *Simplex Lattice Design.*



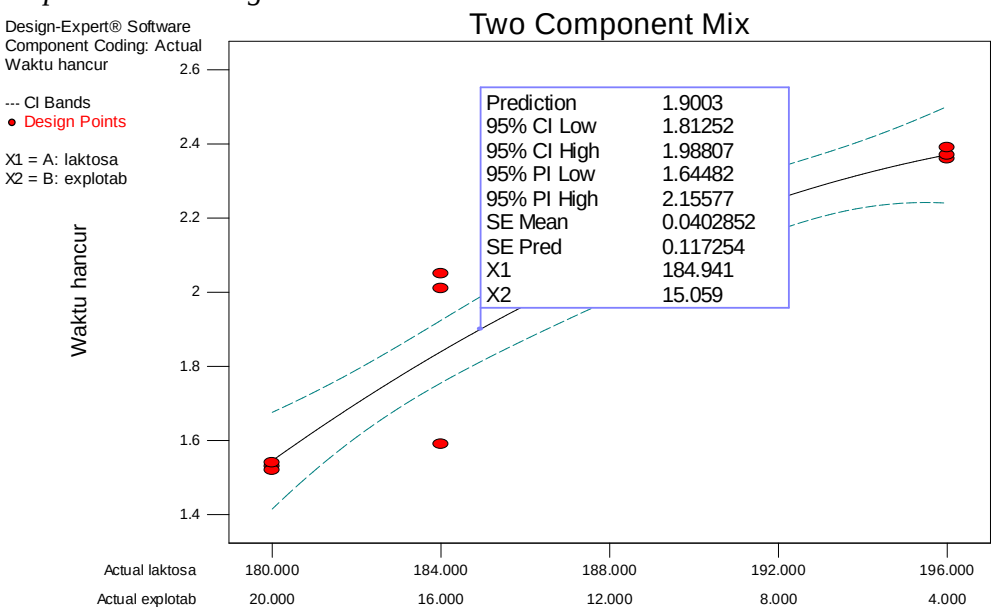
Lampiran 13. Profil waktu alir granul formula prediksi berdasarkan persamaan *Simplex Lattice Design*



Lampiran 14. Profil daya serap air granul formula prediksi berdasrkan persamaan *Simplex Lattice Design*



Lampiran 15. Profil waktu hancur kapsul formula prediksi berdasrkan persamaan *Simplex Lattice Design*



Lampiran 16. Uji higroskopisitas kapsul lendir bekicot

Lampiran 16.a Hasil pemeriksaan higroskopisitas kapsul lendir bekicot hari ke satu sampai ketujuh

Formula	Bobot hari ke- (mg)						
	1	2	3	4	5	6	7
I	563,8±1,4	565,6±1,1	568±1,2	568±1,2	568±1,2	568±1,2	568±1,2
II	571±11,1	574,6±11	576,6±10,4	576,6±10,4	576,6±10,4	576,6±10,4	576,6±10,4
III	562,5±3,9	563,8±4,08	563,8±4,08	563,8±4,08	563,8±4,08	563,8±4,08	563,8±4,08
IV	568 ±7,8	569,4±7,7	572,4±6,4	572,4±6,4	573,8±6,9	573,8±6,9	573,8±6,9
V	561,8±3,5	562,8±3,1	564±3,3	564±3,3	564±3,3	564±3,3	564±3,3
optimm	564,2±1,4	565,4±1,67	566,6±1,1	567±1,2	567±1,2	567±1,2	567±1,2

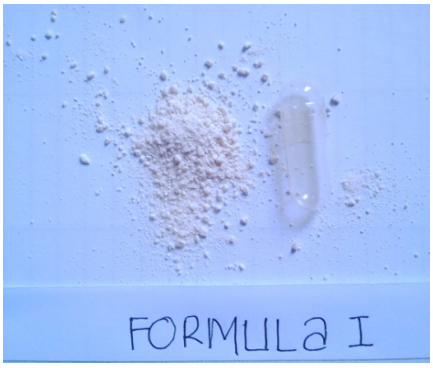
Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 16.b Hasil pemeriksaan higroskopisitas kapsul lendir bekicot minggu kedua sampai keempat.

Formula	Bobot minggu ke- (mg)		
	2	3	4
I	571,8±1,3	572±1	572,4±1,3
II	579,2±9,2	579,8±8,7	580,4±8,5
III	568,6±5,41	571,4±5,0	572,2±4,7
IV	575,6±6,9	576,2±6,9	577,4±6,8
V	564,8±3,6	565,4±3,6	566,6±3,8
optimm	567.6±1,67	568,2±1,30	568,6±0,89

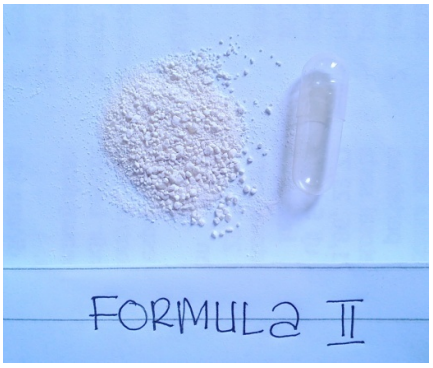
Keterangan:
Formula I : 196 mg laktosa (100%) : 4 mg explotab® (0%)
Formula II : 192 mg laktosa (75%) : 8 mg explotab® (25%)
Formula II : 188 mg laktosa (50%) : 12 mg explotab® (50%)
Formula IV : 184 mg laktosa (25%) : 16 mg explotab® (75%)
Formula V : 180 mg laktosa (0%) : 20 mg explotab® (100%)

Lampiran 17. Uji higroskopisitas warna serbuk sediaan kapsul pada minggu keempat



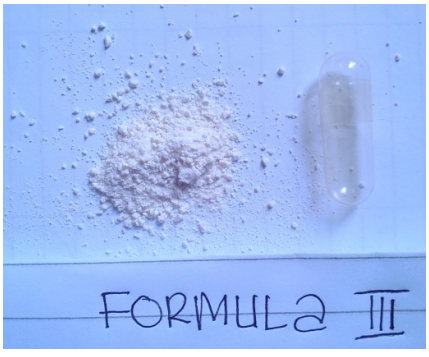
Formula I

Formula IV



Formula II

Formula V



Formula III

Formula Optimum

Lampiran 18. Hasil Uji T *(T-Test)* waktu alir antara hasil Prediksi berdasarkan *Simplex Lattice Design* dengan hasil percobaan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
waktualir	6	6.5150	.03209	6.49	6.57

One-Sample Kolmogorov-Smirnov Test

		waktualir
N		6
Normal Parameters[a,,b]	Mean	6.5150
	Std. Deviation	.03209
Most Extreme Differences	Absolute	.282
	Positive	.282
	Negative	-.218
Kolmogorov-Smirnov Z		.691
Asymp. Sig. (2-tailed)		.727

a. Test distribution is Normal.

b. Calculated from data.

Group Statistics

	perlakuan	N	Mean	Std. Deviation	Std. Error Mean
waktu alir	percobaan	3	6.5400	.02646	.01528
	prediksi	3	6.4900	.00000	.00000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
waktualir	Equal variances assumed	12.000	.026	3.273	4	.031	.05000	.01528	.00759	.09241
	Equal variances not assumed			3.273	2.000	.082	.05000	.01528	-.01572	.11572

Lampiran 19. Hasil Uji T *(T-Test)* daya serap air antara hasil Prediksi berdasarkan *Simplex Lattice Design* dengan hasil percobaan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
dayaserapair	6	.05783	.001329	.056	.060

One-Sample Kolmogorov-Smirnov Test

		dayaserapair
N		6
Normal Parameters[a,,b]	Mean	.05783
	Std. Deviation	.001329
Most Extreme Differences	Absolute	.283
	Positive	.283
	Negative	-.217
Kolmogorov-Smirnov Z		.694
Asymp. Sig. (2-tailed)		.721

a. Test distribution is Normal.

b. Calculated from data.

Group Statistics

	perlakuan	N	Mean	Std. Deviation	Std. Error Mean
dayaserapair	percobaan	3	.05767	.002082	.001202
	prediksi	3	.05800	.000000	.000000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
dayasera pair	Equal variances assumed	10.316	.033	-.277	4	.795	-.000333	.001202	-.003670	.003004
	Equal variances not assumed			-.277	2.000	.808	-.000333	.001202	-.005504	.004838

Lampiran 20. Hasil Uji T *(T-Test)* waktu hancur antara hasil Prediksi berdasarkan *Simplex Lattice Design* dengan hasil percobaan.

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
waktuhancur	6	1.8917	.06210	1.80	1.99

One-Sample Kolmogorov-Smirnov Test

		waktuhancur
N		6
Normal Parameters[a,,b]	Mean	1.8917
	Std. Deviation	.06210
Most Extreme Differences	Absolute	.280
	Positive	.280
	Negative	-.220
Kolmogorov-Smirnov Z		.686
Asymp. Sig. (2-tailed)		.735

a. Test distribution is Normal.

b. Calculated from data.

Group Statistics

	perlakuan	N	Mean	Std. Deviation	Std. Error Mean
waktuhancur	percobaan	3	1.8833	.09713	.05608
	prediksi	3	1.9000	.00000	.00000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
waktuhancur	Equal variances assumed	8.208	.046	-.297	4	.781	-.01667	.05608	-.17236	.13902
	Equal variances not assumed			-.297	2.000	.794	-.01667	.05608	-.25794	.22461

Lampiran 21. Hasil Anava Waktu alir FI, FII, FIII, FIV, FV

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
waktu alir kapsul	15	6.3493	.31033	5.78	6.82

One-Sample Kolmogorov-Smirnov Test

		waktu alir kapsul
N		15
Normal Parameters[a,,b]	Mean	6.3493
	Std. Deviation	.31033
Most Extreme Differences	Absolute	.130
	Positive	.103
	Negative	-.130
Kolmogorov-Smirnov Z		.503
Asymp. Sig. (2-tailed)		.962

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

waktu alir kapsul

Levene Statistic	df1	df2	Sig.
1.223	4	10	.361

ANOVA

waktu alir kapsul

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.938	4	.234	5.707	.012
Within Groups	.411	10	.041		
Total	1.348	14			

Post Hoc Tests

Multiple Comparisons

waktu alir kapsul
Tukey HSD

(I) formula kapsul	(J) formula kapsul	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-.14000	.16548	.910	-.6846	.4046
	formula 3	-.45667	.16548	.113	-1.0013	.0879
	formula 4	-.47000	.16548	.100	-1.0146	.0746
	formula 5	-.69667*	.16548	.012	-1.2413	-.1521
formula 2	formula 1	.14000	.16548	.910	-.4046	.6846
	formula 3	-.31667	.16548	.370	-.8613	.2279
	formula 4	-.33000	.16548	.334	-.8746	.2146
	formula 5	-.55667*	.16548	.045	-1.1013	-.0121
formula 3	formula 1	.45667	.16548	.113	-.0879	1.0013
	formula 2	.31667	.16548	.370	-.2279	.8613
	formula 4	-.01333	.16548	1.000	-.5579	.5313
	formula 5	-.24000	.16548	.613	-.7846	.3046
formula 4	formula 1	.47000	.16548	.100	-.0746	1.0146
	formula 2	.33000	.16548	.334	-.2146	.8746
	formula 3	.01333	.16548	1.000	-.5313	.5579
	formula 5	-.22667	.16548	.658	-.7713	.3179
formula 5	formula 1	.69667*	.16548	.012	.1521	1.2413
	formula 2	.55667*	.16548	.045	.0121	1.1013
	formula 3	.24000	.16548	.613	-.3046	.7846
	formula 4	.22667	.16548	.658	-.3179	.7713

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

waktu alir kapsul

Tukey HSD[a]

formula kapsul	N	Subset for alpha = 0.05	
		1	2
formula 1	3	5.9967	
formula 2	3	6.1367	
formula 3	3	6.4533	6.4533
formula 4	3	6.4667	6.4667
formula 5	3		6.6933
Sig.		.100	.613

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 22. Hasil uji anava uji daya serap air formula FI, FII, FIII, FIV, FV

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
daya serap air kapsul	15	.05300	.009381	.040	.066

One-Sample Kolmogorov-Smirnov Test

		daya serap air kapsul
N		15
Normal Parameters[a,,b]	Mean	.05300
	Std. Deviation	.009381
Most Extreme Differences	Absolute	.139
	Positive	.139
	Negative	-.139
Kolmogorov-Smirnov Z		.538
Asymp. Sig. (2-tailed)		.935

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

daya serap air kapsul

Levene Statistic	df1	df2	Sig.
4.124	4	10	.071

ANOVA

daya serap air kapsul

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.001	4	.000	30.737	.000
Within Groups	.000	10	.000		
Total	.001	14			

Post Hoc Tests

Multiple Comparisons

daya serap air kapsul
Tukey HSD

(I) formula kapsul	(J) formula kapsul	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-.004333	.002486	.452	-.01251	.00385
	formula 3	-.015000*	.002486	.001	-.02318	-.00682
	formula 4	-.020667*	.002486	.000	-.02885	-.01249
	formula 5	-.021667*	.002486	.000	-.02985	-.01349
formula 2	formula 1	.004333	.002486	.452	-.00385	.01251
	formula 3	-.010667*	.002486	.011	-.01885	-.00249
	formula 4	-.016333*	.002486	.000	-.02451	-.00815
	formula 5	-.017333*	.002486	.000	-.02551	-.00915
formula 3	formula 1	.015000*	.002486	.001	.00682	.02318
	formula 2	.010667*	.002486	.011	.00249	.01885
	formula 4	-.005667	.002486	.228	-.01385	.00251
	formula 5	-.006667	.002486	.127	-.01485	.00151
formula 4	formula 1	.020667*	.002486	.000	.01249	.02885
	formula 2	.016333*	.002486	.000	.00815	.02451
	formula 3	.005667	.002486	.228	-.00251	.01385
	formula 5	-.001000	.002486	.994	-.00918	.00718
formula 5	formula 1	.021667*	.002486	.000	.01349	.02985
	formula 2	.017333*	.002486	.000	.00915	.02551
	formula 3	.006667	.002486	.127	-.00151	.01485
	formula 4	.001000	.002486	.994	-.00718	.00918

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

daya serap air kapsul

Tukey HSD[a]

formula kapsul	N	Subset for alpha = 0.05	
		1	2
formula 1	3	.04067	
formula 2	3	.04500	
formula 3	3		.05567
formula 4	3		.06133
formula 5	3		.06233
Sig.		.452	.127

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran23. Hasil uji anava uji waktu hancur formula FI, FII, FIII, FIV, FV.

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
waktu hancur kapsul	15	2.0167	.32279	1.52	2.39

One-Sample Kolmogorov-Smirnov Test

		waktu hancur kapsul
N		15
Normal Parameters[a,,b]	Mean	2.0167
	Std. Deviation	.32279
Most Extreme Differences	Absolute	.225
	Positive	.174
	Negative	-.225
Kolmogorov-Smirnov Z		.872
Asymp. Sig. (2-tailed)		.433

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

waktu hancur kapsul

Levene Statistic	df1	df2	Sig.
12.189	4	10	.082

ANOVA

waktu hancur kapsul

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.324	4	.331	24.634	.000
Within Groups	.134	10	.013		
Total	1.459	14			

Post Hoc Tests

Multiple Comparisons

waktu hancur kapsul
Tukey HSD

(I) formula kapsul	(J) formula kapsul	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	.11333	.09466	.753	-.1982	.4249
	formula 3	.33667*	.09466	.033	.0251	.6482
	formula 4	.49000*	.09466	.003	.1785	.8015
	formula 5	.84333*	.09466	.000	.5318	1.1549
formula 2	formula 1	-.11333	.09466	.753	-.4249	.1982
	formula 3	.22333	.09466	.204	-.0882	.5349
	formula 4	.37667*	.09466	.017	.0651	.6882
	formula 5	.73000*	.09466	.000	.4185	1.0415
formula 3	formula 1	-.33667*	.09466	.033	-.6482	-.0251
	formula 2	-.22333	.09466	.204	-.5349	.0882
	formula 4	.15333	.09466	.518	-.1582	.4649
	formula 5	.50667*	.09466	.002	.1951	.8182
formula 4	formula 1	-.49000*	.09466	.003	-.8015	-.1785
	formula 2	-.37667*	.09466	.017	-.6882	-.0651
	formula 3	-.15333	.09466	.518	-.4649	.1582
	formula 5	.35333*	.09466	.025	.0418	.6649
formula 5	formula 1	-.84333*	.09466	.000	-1.1549	-.5318
	formula 2	-.73000*	.09466	.000	-1.0415	-.4185
	formula 3	-.50667*	.09466	.002	-.8182	-.1951
	formula 4	-.35333*	.09466	.025	-.6649	-.0418

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

waktu hancur kapsul

Tukey HSD[a]

formula kapsul	N	Subset for alpha = 0.05			
		1	2	3	4
formula 5	3	1.5300			
formula 4	3		1.8833		
formula 3	3		2.0367	2.0367	
formula 2	3			2.2600	2.2600
formula 1	3				2.3733
Sig.		1.000	.518	.204	.753

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 24. Hasil uji statistik dan persamaan waktu alir berdasarkan *Simplex Lattice Design* dengan program *Design Expert 8.0.6.1*

Response 1 Waktu alir

ANOVA for Quadratic Mixture Model

***** Mixture Component Coding is L_Pseudo. *****

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	0.89	2	0.45	11.83	0.0015	significant
Linear Mixture	*0.89*	*1*	*0.89*	*23.56*	*0.0004*	
AB	*3.621E-003*	*1*	*3.621E-003*	*0.096*	*0.7623*	
Residual	0.45	12	0.038			
Lack of Fit	*0.043*	*2*	*0.021*	*0.52*	*0.6080*	*not significant*
Pure Error	*0.41*	*10*	*0.041*			
Cor Total	1.35	14				

Std. Dev.	0.19	R-Squared	0.6635
Mean	6.35	Adj R-Squared	0.6074
C.V. %	3.06	Pred R-Squared	0.4835
PRESS	0.70	Adeq Precision	7.927

Component	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
A-laktosa	5.99	1	0.11	5.76	6.22	1.66
B-explotab	6.68	1	0.11	6.45	6.91	1.66
AB	0.15	1	0.48	-0.90	1.19	2.43

Final Equation in Terms of L_Pseudo Components:

Waktu alir =
+5.99 * A
+6.68 * B
+0.15 * A * B

Final Equation in Terms of Real Components:

Waktu alir =
+5.76733 * laktosa
-6.04457 * explotab
+23.21429 * laktosa * explotab

Final Equation in Terms of Actual Components:

Waktu alir =
+0.028837 * laktosa
-0.030223 * explotab
+5.80357E-004 * laktosa * explotab

Lampiran 25. Hasil uji statistik dan persamaan daya serap air berdasarkan *Simplex Lattice Design* dengan program *Design Expert 8.0.6.1*

Response 3 DSA

ANOVA for Quadratic Mixture Model

***** Mixture Component Coding is L_Pseudo. *****

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	1.097E-003	2	5.486E-004	48.84	<0.0001	significant
Linear Mixture	*1.068E-003*	*1*	*1.068E-003*	*95.08*	*< 0.0001*	
AB	*2.917E-005*	*1*	*2.917E-005*	*2.60*	*0.1331*	
Residual	1.348E-004	12	1.123E-005			
Lack of Fit	*4.213E-005*	*2*	*2.107E-005*	*2.27*	*0.1535*	*not significant*
Pure Error	*9.267E-005*	*10*	*9.267E-006*			
Cor Total	1.232E-003	14				

Std. Dev.	3.352E-003	R-Squared	0.8906
Mean	0.053	Adj R-Squared	0.8723
C.V. %	6.32	Pred R-Squared	0.8145
PRESS	2.285E-004	Adeq Precision	15.923

Component	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
A-laktosa	0.039	1	1.821E-003	0.035	0.043	1.66
B-explotab	0.063	1	1.821E-003	0.059	0.067	1.66
AB	0.013	1	8.275E-003	-4.696E-003	0.031	2.43

Final Equation in Terms of L_Pseudo Components:

DSA =
+0.039 * A
+0.063 * B
+0.013 * A * B

Final Equation in Terms of Real Components:

DSA =
+0.029267 * laktosa
-1.50573 * explotab
+2.08333 * laktosa * explotab

Final Equation in Terms of Actual Components:

DSA =
+1.46333E-004 * laktosa
-7.52867E-003 * explotab
+5.20833E-005 * laktosa * explotab

Lampiran 26. Hasil uji statistik dan persamaan waktu hancur berdasarkan *Simplex Lattice Design* dengan program *Design Expert 8.0.6.1*

Response 2 Waktu hancur

ANOVA for Quadratic Mixture Model

***** Mixture Component Coding is L_Pseudo. *****

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	1.31	2	0.66	54.15	< 0.0001	significant
Linear Mixture	*1.28*	*1*	*1.28*	*105.33*	*<0.0001*	
AB	*0.036*	*1*	*0.036*	*2.97*	*0.1104*	
Residual	0.15	12	0.012			
Lack of Fit	*0.011*	*2*	*5.554E-003*	*0.41*	*0.6723*	*not significant*
Pure Error	*0.13*	*10*	*0.013*			
Cor Total	1.46	14				

Std. Dev.	0.11	R-Squared	0.9003
Mean	2.02	Adj R-Squared	0.8836
C.V. %	5.46	Pred R-Squared	0.8689
PRESS	0.19	Adeq Precision	16.759

Component	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
A-laktosa	2.37	1	0.060	2.24	2.50	1.66
B-explotab	1.55	1	0.060	1.42	1.68	1.66
AB	0.47	1	0.27	-0.12	1.06	2.43

Final Equation in Terms of L_Pseudo Components:

Waktu hancur =
+2.37 * A
+1.55 * B
+0.47 * A * B

Final Equation in Terms of Real Components:

Waktu hancur =
+2.43067 * laktosa
-72.31457 * explotab
+73.21429 * laktosa * explotab

Final Equation in Terms of Actual Components:

Waktu hancur =
+0.012153 * laktosa
-0.36157 * explotab
+1.83036E-003 * laktosa * explotab