

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Hasil penelitian ini dapat disimpulkan bahwa :

1. Undur-undur laut (*Emerita emeritus*) dapat dibuat sediaan granul secara granulasi basah dengan menggunakan amilum dan laktosa sebagai bahan pengisi yang memenuhi syarat uji mutu fisik granul.
2. Amilum dan laktosa berpengaruh terhadap sifat fisik granul undur-undur laut (*Emerita emeritus*).
3. Granul undur-undur laut (*Emerita emeritus*) yang dihasilkan berpengaruh pada tanggapan rasa terhadap aroma, tetapi tidak berpengaruh terhadap rasa dan tekstur.

B. Saran

Saran dari penelitian ini adalah :

1. Perlu dilakukan penelitian lebih lanjut untuk membuat granul undur-undur laut (*Emerita emeritus*) dengan menggunakan bahan pengisi yang lain serta melakukan karakterisasi bentuk dan ukuran granul.
2. Perlu dilakukan penelitian lebih lanjut untuk membuat granul undur-undur laut (*Emerita emeritus*) dengan essens yang sesuai agar diperoleh hasil tanggapan rasa yang lebih baik.

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Lampiran 1. Surat determinasi undur-undur laut



**BAGIAN BIOLOGI FARMASI
FAKULTAS FARMASI
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SURAT KETERANGAN

No.: BF.289/Ident/Det/IX/2013

Kepada Yth. :
Sdri/Sdr. Ari Dwi Prasetyo
NIM. 16102862 A
Universitas Setia Budi
Di Surakarta

Dengan hormat,

Bersama ini kami sampaikan hasil identifikasi/determinasi sampel yang Saudara kirimkan ke Bagian Biologi Farmasi, Fakultas Farmasi UGM, adalah :

No.Pendaftaran	Jenis	Suku
289	<i>Emerita emeritus</i> L.	Hippiidae

Demikian, semoga dapat digunakan sebagaimana mestinya.

Yogyakarta, 23 September 2013
Ketua



Prof. Dr. Wahyono, SU., Apt.
NIP. 195007011977021001

Lampiran 2. Surat uji tanggapan rasa granul undur-undur laut

Uji Tanggapan Rasa terhadap Rasa, Aroma dan Tekstur Granul Undur-Undur

Laut (*Emerita emeritus*)

Produk : Granul undur-undur laut Tanggal:

Nama Orang Tua :

Nama Anak :

Usia Anak :

Jenis Kelamin :

Tempat Pengambilan Kuisioner :

Petunjuk

1. 5 gram/ 1 sachet granul undur-undur laut, di campurkan dengan nasi secukupnya sesuai selera, di aduk sampai rata.
2. Lalu dimakan.
3. Isikan penilaian anda pada pernyataan yang sesuai dengan penilaian anda.

PENILAIAN	RASA	AROMA	TEKSTUR
Formula 1			
Formula 2			
Formula 3			
Formula 4			
Formula 5			
Formula 6			

Keterangan :

1= Tidak suka

2= Agak suka

3= Suka

4= Sangat suka

5= Sangat suka sekali

Lampiran 3. Contoh surat uji tanggapan rasa granul undur-undur laut

Uji Tanggapan Rasa terhadap Rasa, Aroma dan Tekstur Granul Undur-Undur Laut

(Emerita emeritus)

Produk : Granul undur-undur laut Tanggal: 12 April 2014
 Nama Orang Tua : Ibu Retno
 Nama Anak : Shadiq Resmaputra
 Usia Anak : 5th
 Jenis Kelamin : Laki-laki
 Tempat Pengambilan Kuisisioner : Posyandu Desa Keban, Kartasura,
 Wiragunan, Sukoharjo

Petunjuk

1. 5 gram/ 1 sachet granul undur-undur laut, di campurkan dengan nasi secukupnya sesuai selera, di aduk sampai rata
2. Lalu dimakan
3. Isikan penilaian anda pada pernyataan yang sesuai dengan penilaian anda

PENILAIAN	RASA	AROMA	TEKSTUR
Formula 1	2	4	2
Formula 2	3	3	3
Formula 3	2	2	2
Formula 4	2	3	2
Formula 5	3	3	2
Formula 6	3	3	3

Keterangan :

- 1= Tidak suka
- 2= Agak suka
- 3= Suka
- 4= Sangat suka
- 5= Sangat suka sekali

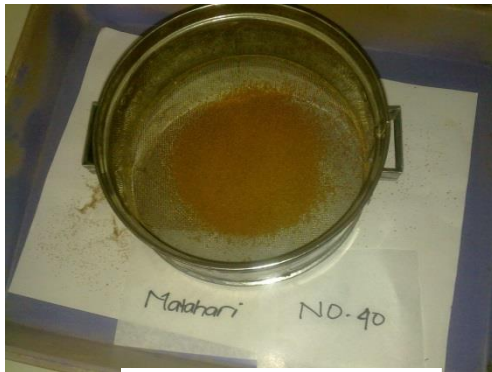
Lampiran 4. Daftar hadir uji tanggapan rasa granul undur-undur laut

DAFTAR HADIR UJI TANGGAPAN RASA GRANUL UNBUR-UNBUR LAUT

No.	NAMA	Tanda tangan
1.	Dwi Mulyani	1. <i>Dwi Mulyani</i>
2.	DITA K.S	2. <i>Dita</i>
3.	Lina	3. <i>Li</i>
4.	Retro	4. <i>Retro</i>
5.	dwi s	5. <i>dwi s</i>
6.	Juminten	6. <i>Juminten</i>
7.	ayu	7. <i>Ayu</i>
8.	Juni	8. <i>Juni</i>
9.	ria s	9. <i>Ria</i>
10.	Mimi	10. <i>Mimi</i>
11.	Dina	11. <i>Dina</i>
12.	Sumini	12. <i>Sumini</i>
13.	Juminten	13. <i>Juminten</i>
14.	TRI M	14. <i>TRI M</i>
15.	Mulyani	15. <i>Mulyani</i>
16.	Listyowati	16. <i>Listyowati</i>
17.	Radinem	17. <i>Radinem</i>
18.	ERNA	18. <i>ERNA</i>
19.	Diah ayu	19. <i>Diah ayu</i>
20.	Jamilah	20. <i>Jamilah</i>
21.	purwanti	21. <i>Purwanti</i>

Lampiran 5. Foto pelaksanaan uji tanggapan rasa granul undur-undur laut



Lampiran 6. Granul undur-undur laut

Serbuk undur-undur
laut kering matahari



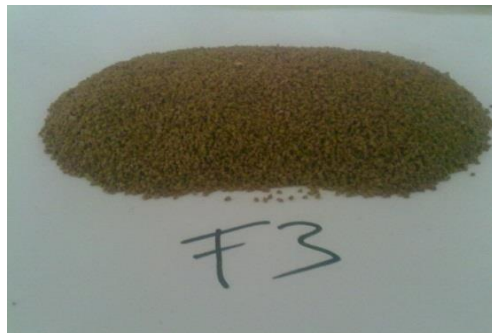
Serbuk undur-undur laut
kering matahari dan sangrai



Formula I



Formula II



Formula III



Formula IV



Formula V



Formula VI

Lampiran 7. Foto alat-alat yang digunakan



Timbangan analitik



Corong kaca



Ayakan no. 16 mesh



Ayakan no. 18 mesh



Mesin ketuk BJ
mampat modifikasi



Moisture analyce
balance



Oven

Lampiran 8. Kelembaban granul

a. Formula I

No.	Bobot(gram)	Kelembaban (%)
1	2,00	8,00
2	2,00	8,00
3	2,00	8,50
Rata-rata	2,00	8,17
SD		0,29

b. Formula II

No.	Bobot(gram)	Kelembaban (%)
1	2,00	4,50
2	2,00	5,00
3	2,00	5,00
Rata-rata	2,00	4,83
SD		0,29

c. Formula III

No.	Bobot(gram)	Kelembaban (%)
1	2,00	7,00
2	2,00	7,00
3	2,00	7,00
Rata-rata	2,00	7,00
SD		0,00

d. Formula IV

No.	Bobot(gram)	Kelembaban (%)
1	2,00	6,00
2	2,00	6,00
3	2,00	6,00
Rata-rata	2,00	6,00
SD		0,00

e. Formula V

No.	Bobot(gram)	Kelembaban (%)
1	2,00	3,50
2	2,00	4,00
3	2,00	3,50
Rata-rata	2,00	3,67
SD		0,29

f. Formula VI

No.	Bobot(gram)	Kelembaban (%)
1	2,00	5,00
2	2,00	5,00
3	2,00	4,50
Rata-rata	2,00	4,83
SD		0,29

Hasil kelembaban semua formula

No.	F1	F2	F3	F4	F5	F6
1	8,00	4,50	7,00	6,00	3,50	5,00
2	8,00	5,00	7,00	6,00	4,00	5,00
3	8,50	5,00	7,00	6,00	3,50	4,50
X	8,17	4,83	7,00	6,00	3,67	4,83
SD	0,29	0,29	0,00	0,00	0,29	0,29

*Keterangan :

X = rata-rata perhitungan
SD = simpangan baku

Lampiran 9. Waktu alir granul

a. Formula I

Bobot (gram)	Waktu (detik)
	8,32
100	8,33
	8,45
Rata-rata	8,37
SD	0,07

b. Formula II

Bobot (gram)	Waktu (detik)
	5,40
100	5,48
	5,53
Rata-rata	5,47
SD	0,07

c. Formula III

Bobot (gram)	Waktu (detik)
	8,07
100	8,10
	8,19
Rata-rata	8,12
SD	0,06

d. Formula IV

Bobot (gram)	Waktu (detik)
	6,97
100	6,98
	7,04
Rata-rata	6,99
SD	0,04

e. Formula V

Bobot (gram)	Waktu (detik)
	5,26
100	5,31
	5,30
Rata-rata	5,30
SD	0,07

f. Formula VI

Bobot (gram)	Waktu (detik)
100	6,65
	6,70
	6,83
Rata-rata	6,73
SD	0,09

Hasil waktu alir semua formula

No.	F1	F2	F3	F4	F5	F6
1	8,32	5,40	8,07	6,97	5,26	6,65
2	8,33	5,48	8,10	6,98	5,31	6,70
3	8,45	5,53	8,19	7,04	5,32	6,83
X	8,37	5,47	8,12	6,99	5,30	6,73
SD	0,07	0,07	0,06	0,04	0,03	0,09

*Keterangan :

X = rata-rata perhitungan
SD = simpangan baku

Lampiran 10. Kecepatan alir granul**a. Formula I**

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	8,32	12,01
2	100	8,33	12,00
3	100	8,45	11,83
Rata-rata	100	8,37	11,95
SD		0,07	0,10

b. Formula II

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	5,40	18,52
2	100	5,48	18,25
3	100	5,53	18,08
Rata-rata	100	5,47	18,28
SD		0,07	0,22

c. Formula III

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	8,07	12,39
2	100	8,10	12,35
3	100	8,19	12,21
Rata-rata	100	8,12	12,32
SD		0,06	0,09

d. Formula IV

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	6,97	14,35
2	100	6,98	14,33
3	100	7,04	14,20
Rata-rata	100	6,99	14,29
SD		0,04	0,08

e. Formula V

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	5,26	18,52
2	100	5,31	18,25
3	100	5,32	18,08
Rata-rata	100	5,30	18,28
SD		0,07	0,22

f. Formula VI

No.	Bobot (gram)	Waktu (detik)	Kecepatan alir (g/ detik)
1	100	6,65	15,04
2	100	6,70	14,92
3	100	6,83	14,64
Rata-rata	100	6,73	14,86
SD		0,09	0,20

Hasil kecepatan alir semua formula

No.	F1	F2	F3	F4	F5	F6
1	12,01	18,52	12,39	14,35	18,52	15,04
2	12,00	18,25	12,35	14,33	18,25	14,92
3	11,83	18,08	12,21	14,20	18,08	14,64
X	11,95	18,28	12,32	14,29	18,28	14,86
SD	0,10	0,22	0,09	0,08	0,22	0,20

*Keterangan :

X = rata-rata perhitungan
SD = simpangan baku

Lampiran 11. Sudut diam granul

a. Formula I

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	11,36	5,68	3,12	0,55	28,82
2	11,35	5,67	3,43	0,60	31,14
3	11,23	5,61	3,58	0,64	32,53
Rata-rata	11,31	5,66	3,38	0,59	30,83
SD					1,87

b. Formula II

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	12,95	6,47	3,70	0,57	29,74
2	12,90	6,45	3,86	0,59	30,93
3	12,81	6,41	3,97	0,62	31,81
Rata-rata	12,88	6,44	3,85	0,59	30,83
SD					1,04

c. Formula III

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	12,95	6,47	3,82	0,58	30,53
2	12,85	6,42	3,87	0,60	31,09
3	12,47	6,24	3,98	0,64	32,58
Rata-rata	12,76	6,38	3,89	0,61	31,40
SD					1,06

d. Formula IV

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	12,85	6,42	3,52	0,54	28,75
2	12,84	6,42	3,51	0,54	28,70
3	12,81	6,41	3,56	0,55	29,05
Rata-rata	12,83	6,42	3,53	0,55	28,83
SD					0,19

e. Formula V

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	13,97	6,98	3,52	0,50	25,62
2	13,75	6,87	3,51	0,51	26,58
3	13,20	6,60	3,56	0,54	28,00
Rata-rata	13,64	6,82	3,53	0,52	26,73
SD					1,19

f. Formula VI

No.	Diameter	Jari-jari	Tinggi	Tan	Sudut diam ($^{\circ}$)
1	11,95	5,97	3,15	0,53	27,80
2	11,73	5,87	3,20	0,55	28,60
3	11,24	5,62	3,27	0,58	30,22
Rata-rata	11,64	5,82	3,21	0,55	28,87
SD					1,23

Contoh Perhitungan

$$\text{Tg } \alpha = \frac{\text{tinggi}}{\text{jari-jari}}$$

$$= \frac{3,12}{5,68}$$

$$= 0,55$$

$$\alpha = 28,82$$

$$\text{Sudut diam} = 28,82^{\circ}$$

Lampiran 12. Bobot jenis ruah

a. Formula I

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	44,32	0,44
2	100	44,28	0,44
3	100	44,39	0,44
Rata-rata	100	44,33	0,44
SD			0,0057

b. Formula II

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	49,16	0,49
2	100	49,23	0,49
3	100	49,18	0,49
Rata-rata	100	49,19	0,49
SD			0,0057

c. Formula III

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	42,93	0,43
2	100	42,98	0,43
3	100	43,11	0,43
Rata-rata	100	43,00	0,43
SD			0,0058

d. Formula IV

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	55,13	0,55
2	100	54,83	0,55
3	100	5,03	0,55
Rata-rata	100	55,00	0,55
SD			0,0057

e. Formula V

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	60,56	0,60
2	100	59,64	0,59
3	100	59,59	0,59
Rata-rata	100	59,93	0,59
SD			0,0057

f. Formula VI

No.	Volume (mL)	Bobot (gram)	Bobot jenis ruah (g/mL)
1	100	54,96	0,54
2	100	54,89	0,54
3	100	54,90	0,54
Rata-rata	100	54,92	0,54
SD			0,0057

Contoh Perhitungan

$$\text{Bobot jenis ruah} = \frac{\text{bobot (g)}}{\text{volume (mL)}}$$

$$= \frac{44,32}{100}$$

$$= 0,44 \text{ g/ mL}$$

Lampiran 13. Bobot jenis mampat

a. Formula I

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	91	44,32	0,48
2	100	91	44,28	0,48
3	100	90	44,39	0,49
Rata-rata	100	90,67	44,33	0,48
SD				0,0057

b. Formula II

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	92	49,16	0,53
2	100	93	49,23	0,53
3	100	92	49,18	0,53
Rata-rata	100	92,33	49,19	0,53
SD				0,0057

c. Formula III

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	92	42,93	0,46
2	100	91	42,98	0,47
3	100	91	43,11	0,47
Rata-rata	100	91,33	43,00	0,47
SD				0,0058

d. Formula IV

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	90	55,13	0,61
2	100	92	54,83	0,59
3	100	91	55,03	0,60
Rata-rata	100	91	55,00	0,60
SD				0,0100

e. Formula V

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	91	60,56	0,66
2	100	93	59,64	0,64
3	100	93	59,59	0,64
Rata-rata	100	92,33	59,93	0,64
SD				0,0120

f. Formula VI

No.	V awal (mL)	V akhir (mL)	Bobot (g)	Bobot jenis mampat (g/mL)
1	100	92	54,96	0,59
2	100	91	54,89	0,60
3	100	91	54,90	0,60
Rata-rata	100	91,33	54,92	0,60
SD				0,0058

Contoh Perhitungan

$$\text{Bobot jenis mampat} = \frac{\text{bobot (g)}}{\text{volume akhir (mL)}} \times 100$$

$$= \frac{44,32}{91} \times 100$$

$$= 0,48 \text{ g/ mL}$$

Lampiran 14. Indeks kompresibilitas

a. Formula I

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	91	9
2	100	91	9
3	100	90	10
Rata-rata	100	90,67	9,33
SD			0,57

b. Formula II

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	92	8
2	100	93	7
3	100	92	8
Rata-rata	100	92,33	7,67
SD			0,57

c. Formula III

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	92	8
2	100	91	9
3	100	91	9
Rata-rata	100	91,33	8,67
SD			0,58

d. Formula IV

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	90	10
2	100	92	8
3	100	91	9
Rata-rata	100	91	9
SD			1,00

e. Formula V

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	91	9
2	100	93	7
3	100	93	7
Rata-rata	100	92,33	7,67
SD			1,15

f. Formula VI

No.	V awal (mL)	V akhir (mL)	Indeks kompresibilitas (%)
1	100	92	8
2	100	91	9
3	100	91	9
Rata-rata	100	91,33	8,67
SD			0,58

Contoh Perhitungan

$$\text{Indeks kompresibilitas} = \frac{\text{volume awal (mL)} - \text{volume akhir (mL)}}{\text{volume awal (mL)}} \times 100\%$$

$$= \frac{100 - 91}{100} \times 100 \%$$

$$= 9 \%$$

Lampiran 15. Uji tanggapan rasa

a. Formula I

No.	Rasa	Aroma	Tekstur
1	2	2	2
2	2	3	2
3	3	2	2
4	2	4	2
5	2	3	3
6	3	3	2
7	2	2	2
8	2	3	2
9	2	4	3
10	2	3	2
11	2	2	2
12	3	3	2
13	2	3	2
14	3	3	3
15	2	2	2
16	2	2	2
17	2	3	2
18	2	2	2
19	2	2	2
20	2	2	2
Rata2	2,20	2,65	2,15
SD	0,41	0,67	0,37

b. Formula II

No.	Rasa	Aroma	Tekstur
1	3	3	2
2	3	4	2
3	2	3	2
4	3	3	3
5	2	2	2
6	2	3	3
7	3	3	2
8	2	3	2
9	3	2	3
10	2	2	2
11	2	3	2

No.	Rasa	Aroma	Tekstur
12	3	2	2
13	3	3	3
14	2	2	2
15	2	3	2
16	3	4	2
17	2	2	2
18	3	3	2
19	2	2	2
20	3	3	3
Rata2	2,50	2,75	2,25
SD	0,51	0,64	0,44

c. Formula III

No.	Rasa	Aroma	Tekstur
1	2	2	2
2	2	2	2
3	2	3	2
4	3	3	3
5	2	2	2
6	3	3	2
7	2	2	2
8	2	2	2
9	2	2	2
10	3	2	2
11	2	2	2
12	2	2	2
13	2	2	2
14	3	3	2
15	2	2	2
16	2	2	2
17	2	2	2
18	2	2	2
19	2	3	3
20	2	3	2
Rata2	2,20	2,30	2,10
SD	0,41	0,47	0,31

d. Formula IV

No.	Rasa	Aroma	Tekstur
1	2	3	2
2	2	2	2
3	3	3	3
4	2	3	2
5	3	4	2
6	3	3	2
7	2	3	2
8	2	2	2
9	2	3	2
10	2	2	2
11	3	3	2
12	2	2	2
13	2	3	3
14	3	4	3
15	2	3	2
16	3	4	2
17	3	3	3
18	2	3	2
19	2	2	2
20	2	3	2
Rata2	2,35	2,90	2,20
SD	0,49	0,64	0,41

e. Formula V

No.	Rasa	Aroma	Tekstur
1	3	3	2
2	2	3	2
3	3	3	3
4	3	3	2
5	2	2	2
6	3	3	3
7	2	2	2
8	2	3	2
9	3	3	2
10	3	4	3
11	3	4	2
12	2	2	2

No.	Rasa	Aroma	Tekstur
13	2	3	2
14	2	2	2
15	3	3	3
16	2	3	2
17	2	2	2
18	2	3	2
19	3	3	3
20	3	4	2
Rata2	2,50	2,90	2,25
SD	0,51	0,64	0,44

f. Formula VI

No.	Rasa	Aroma	Tekstur
1	2	2	2
2	2	2	2
3	2	3	2
4	3	3	3
5	2	2	2
6	3	3	2
7	2	2	2
8	2	2	2
9	2	2	2
10	3	2	2
11	2	2	2
12	2	2	2
13	2	2	2
14	3	3	2
15	2	2	2
16	2	2	2
17	2	2	2
18	2	2	2
19	2	3	3
20	2	3	2
Rata2	2,20	2,30	2,10
SD	0,41	0,47	0,31

Lampiran 16. Analisa statistika Anava

a. Kelembaban granul

One-Sample Kolmogorov-Smirnov Test

		Kelembaban
N		18
Normal Parameters ^{a, b}	Mean	5.6944
	Std. Deviation	1.56373
Most Extreme Differences	Absolute	.227
	Positive	.227
	Negative	-.131
Kolmogorov-Smirnov Z		.963
Asymp. Sig. (2-tailed)		.311

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variances^a

Dependent Variable: Kelembaban

F	df1	df2	Sig.
2.638	5	12	.124

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengeringan + Formula * Metode Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Kelembaban

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	40.236 ^a	5	8.047	72.425	.000
Intercept	583.681	1	583.681	5253.125	.000
Formula	21.778	2	10.889	98.000	.000
Metode Pengeringan	17.014	1	17.014	153.125	.000
Formula * Metode Pengeringan	1.444	2	.722	6.500	.012
Error	1.333	12	.111		
Total	625.250	18			
Corrected Total	41.569	17			

a. R Squared = .968 (Adjusted R Squared = .955)

Multiple Comparisons

Kelembaban

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	2.6667*	.19245	.000	2.2474	3.0860
	Tanpa Pengisi	1.0000*	.19245	.000	.5807	1.4193
Laktosa	Amilum	-2.6667*	.19245	.000	-3.0860	-2.2474
	Tanpa Pengisi	-1.6667*	.19245	.000	-2.0860	-1.2474
Tanpa Pengisi	Amilum	-1.0000*	.19245	.000	-1.4193	-.5807
	Laktosa	1.6667*	.19245	.000	1.2474	2.0860

Based on observed means.

The error term is Mean Square(Error) = .111.

*. The mean difference is significant at the .05 level.

ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.
Kelembaban * Formula	21.778	2	10.889	8.253	.004
Between Groups (Combined)					
Within Groups	19.792	15	1.319		
Total	41.569	17			

ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.
Kelembaban * Metode Pengeringan	17.014	1	17.014	11.086	.004
Between Groups (Combined)					
Within Groups	24.556	16	1.535		
Total	41.569	17			

b. Waktu alir

One-Sample Kolmogorov-Smirnov Test

		Waktu Alir
N		18
Normal Parameters ^{a,b}	Mean	6.8294
	Std. Deviation	1.20886
Most Extreme Differences	Absolute	.192
	Positive	.192
	Negative	-.181
Kolmogorov-Smirnov Z		.815
Asymp. Sig. (2-tailed)		.520

a. Test distribution is Normal.

b. Calculated from data.

**Levene's Test of Equality of Error
Variances^a**

Dependent Variable: Waktu Alir

F	df1	df2	Sig.
1.201	5	12	.365

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengeringan + Formula * Metode Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Waktu Alir

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	24.794 ^a	5	4.959	1212.742	.000
Intercept	839.544	1	839.544	205323.164	.000
Formula	4.248	2	2.124	519.499	.000
Metode Pengeringan	4.312	1	4.312	1054.567	.000
Formula * Metode Pengeringan	16.233	2	8.117	1985.072	.000
Error	.049	12	.004		
Total	864.387	18			
Corrected Total	24.843	17			

a. R Squared = .998 (Adjusted R Squared = .997)

Multiple Comparisons

WaktuAlir

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	-1.1900*	.03692	.000	-1.2704	-1.1096
	Tanpa Pengisi	-.5983*	.03692	.000	-.6788	-.5179
Laktosa	Amilum	1.1900*	.03692	.000	1.1096	1.2704
	Tanpa Pengisi	.5917*	.03692	.000	.5112	.6721
Tanpa Pengisi	Amilum	.5983*	.03692	.000	.5179	.6788
	Laktosa	-.5917*	.03692	.000	-.6721	-.5112

Based on observed means.

The error term is Mean Square(Error) = .004.

*. The mean difference is significant at the .05 level.

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Waktu Alir *	Between Groups (Combined)	4.248	2	2.124	1.547	.245
Formula	Within Groups	20.595	15	1.373		
	Total	24.843	17			

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Waktu Alir *	Between Groups (Combined)	4.312	1	4.312	3.360	.085
Metode Pengerian	Within Groups	20.531	16	1.283		
	Total	24.843	17			

c. Kecepatan alir

One-Sample Kolmogorov-Smirnov Test

		Kecepatan Alir
N		18
Normal Parameters ^{a,,b}	Mean	15.0988
	Std. Deviation	2.75057
Most Extreme Differences	Absolute	.194
	Positive	.176
	Negative	-.194
Kolmogorov-Smirnov Z		.825
Asymp. Sig. (2-tailed)		.505

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variances^a

Dependent Variable: KecepatanAlir

F	df1	df2	Sig.
1.350	5	12	.309

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode

Pengeringan + Formula * Metode

Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Kecepatan Alir

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	128.358 ^a	5	25.672	1197.003	.000
Intercept	4103.544	1	4103.544	191337.748	.000
Formula	22.716	2	11.358	529.586	.000
Metode Pengeringan	15.066	1	15.066	702.503	.000
Formula * Metode Pengeringan	90.576	2	45.288	2111.671	.000
Error	.257	12	.021		
Total	4232.159	18			
Corrected Total	128.616	17			

a. R Squared = .998 (Adjusted R Squared = .997)

Multiple Comparisons

Kecepatan Alir

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	2.6961 [*]	.08455	.000	2.5119	2.8803
	Tanpa Pengisi	.8715 [*]	.08455	.000	.6873	1.0557
Laktosa	Amilum	-2.6961 [*]	.08455	.000	-2.8803	-2.5119
	Tanpa Pengisi	-1.8246 [*]	.08455	.000	-2.0088	-1.6404
Tanpa Pengisi	Amilum	-.8715 [*]	.08455	.000	-1.0557	-.6873
	Laktosa	1.8246 [*]	.08455	.000	1.6404	2.0088

Based on observed means.

The error term is Mean Square(Error) = .021.

*. The mean difference is significant at the .05 level.

ANOVA Table

		Sum of Squares	Df	Mean Square	F	Sig.
Kecepatan Alir *	Between Groups (Combined)	22.716	2	11.358	1.609	.233
Formula	Within Groups	105.900	15	7.060		
	Total	128.616	17			

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Kecepatan Alir *	Between Groups (Combined)	15.066	1	15.066	2.123	.164
Metode Pengeringan	Within Groups	113.549	16	7.097		
	Total	128.616	17			

d.Sudut diam

One-Sample Kolmogorov-Smirnov Test

		Sudut Diam
N		18
Normal Parameters ^{a,b}	Mean	29.5828
	Std. Deviation	1.94298
Most Extreme Differences	Absolute	.108
	Positive	.108
	Negative	-.089
Kolmogorov-Smirnov Z		.458
Asymp. Sig. (2-tailed)		.985

a. Test distribution is Normal.

b. Calculated from data.

**Levene's Test of Equality of Error
Variances^a**

Dependent Variable: Sudut Diam

F	df1	df2	Sig.
1.338	5	12	.313

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengerinan + Formula * Metode Pengerinan

Tests of Between-Subjects Effects

Dependent Variable: Sudut Diam

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	46.768 ^a	5	9.354	6.447	.004
Intercept	15752.533	1	15752.533	10857.909	.000
Formula	6.079	2	3.040	2.095	.166
Metode Pengerinan	37.123	1	37.123	25.588	.000
Formula * Metode Pengerinan	3.566	2	1.783	1.229	.327
Error	17.409	12	1.451		
Total	15816.711	18			
Corrected Total	64.178	17			

a. R Squared = .729 (Adjusted R Squared = .616)

Multiple Comparisons

Sudut Diam

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	1.0517	.69541	.156	-.4635	2.5668
	Tanpa Pengisi	-.3050	.69541	.669	-1.8202	1.2102
Laktosa	Amilum	-1.0517	.69541	.156	-2.5668	.4635
	Tanpa Pengisi	-1.3567	.69541	.075	-2.8718	.1585
Tanpa Pengisi	Amilum	.3050	.69541	.669	-1.2102	1.8202
	Laktosa	1.3567	.69541	.075	-.1585	2.8718

Based on observed means.

The error term is Mean Square(Error) = 1.451.

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Sudut Diam * Formula	Between Groups (Combined)	6.079	2	3.040	.785	.474
	Within Groups	58.099	15	3.873		
	Total	64.178	17			

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Sudut Diam * Pengeringan	Between Groups (Combined)	37.123	1	37.123	21.955	.000
	Within Groups	27.054	16	1.691		
	Total	64.178	17			

e. Bobot jenis ruah

One-Sample Kolmogorov-Smirnov Test

		Bobot jenis ruah
N		18
Normal Parameters ^{a,,b}	Mean	.510636
	Std. Deviation	.0627259
Most Extreme Differences	Absolute	.226
	Positive	.190
	Negative	-.226
Kolmogorov-Smirnov Z		.958
Asymp. Sig. (2-tailed)		.317

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variances^a

Dependent Variable: Bj ruah

F	df1	df2	Sig.
.274	5	12	.608

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengeringan + Formula * Metode Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Bj ruah

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.067 ^a	5	.013	2380.198	.000
Intercept	4.693	1	4.693	835937.337	.000
Formula	.011	2	.006	993.828	.000
Metode Pengeringan	.056	1	.056	9887.448	.000
Formula * Metode Pengeringan	.000	2	7.268E-5	12.944	.001
Error	6.738E-5	12	5.615E-6		
Total	4.760	18			
Corrected Total	.067	17			

a. R Squared = .999 (Adjusted R Squared = .999)

Multiple Comparisons

Bj ruah

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	-.048953*	.0013680	.000	-.051934	-.045973
	Tanpa Pengisi	.007030*	.0013680	.000	.004049	.010011
Laktosa	Amilum	.048953*	.0013680	.000	.045973	.051934
	Tanpa Pengisi	.055983*	.0013680	.000	.053003	.058964
Tanpa Pengisi	Amilum	-.007030*	.0013680	.000	-.010011	-.004049
	Laktosa	-.055983*	.0013680	.000	-.058964	-.053003

Based on observed means.

The error term is Mean Square(Error) = 5.61E-006.

*. The mean difference is significant at the .05 level.

ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.
Bj ruah * Formula	.011	2	.006	1.502	.254
Between Groups (Combined)					
Within Groups	.056	15	.004		
Total	.067	17			

ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.
Bj ruah *	.056	1	.056	78.102	.000
Between Groups (Combined)					
Metode Pengeri ngan	.011	16	.001		
Within Groups					
Total	.067	17			

f. Bobot jenis mampat

One-Sample Kolmogorov-Smirnov Test

		Bobot jenis mampat
N		18
Normal Parameters ^{a,b}	Mean	.557936
	Std. Deviation	.0671499
Most Extreme Differences	Absolute	.214
	Positive	.166
	Negative	-.214
Kolmogorov-Smirnov Z		.910
Asymp. Sig. (2-tailed)		.379

a. Test distribution is Normal.

b. Calculated from data.

**Levene's Test of Equality of Error
Variances^a**

Dependent Variable: Bj mampat

F	df1	df2	Sig.
.270	5	12	.611

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengeringan + Formula * Metode Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Bj mampat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.076 ^a	5	.015	288.031	.000
Intercept	5.603	1	5.603	106148.856	.000
Formula	.010	2	.005	96.303	.000
Metode Pengeringan	.066	1	.066	1243.596	.000
Formula * Metode Pengeringan	.000	2	.000	1.977	.181
Error	.001	12	5.279E-5		
Total	5.680	18			
Corrected Total	.077	17			

a. R Squared = .992 (Adjusted R Squared = .988)

Multiple Comparisons

Bj mampat

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	-.044268*	.0041947	.000	-.053407	-.035128
	Tanpa Pengisi	.010608*	.0041947	.026	.001469	.019748
Laktosa	Amilum	.044268*	.0041947	.000	.035128	.053407
	Tanpa Pengisi	.054876*	.0041947	.000	.045736	.064015
Tanpa Pengisi	Amilum	-.010608*	.0041947	.026	-.019748	-.001469
	Laktosa	-.054876*	.0041947	.000	-.064015	-.045736

Based on observed means.

The error term is Mean Square(Error) = 5.28E-005.

*. The mean difference is significant at the .05 level.

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Bj mampat *	Between Groups (Combinated)	.010	2	.005	1.147	.344
Formula	Within Groups	.066	15	.004		
	Total	.077	17			

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Bj mampat * Metode	Between Groups (Combinated)	.066	1	.066	95.404	.000
Pengerina n	Within Groups	.011	16	.001		
	Total	.077	17			

g. Indeks kompresibilitas

One-Sample Kolmogorov-Smirnov Test

		Indeks Kompresibilitas
N		18
Normal Parameters ^{a,,b}	Mean	8.5000
	Std. Deviation	.92355
Most Extreme Differences	Absolute	.261
	Positive	.183
	Negative	-.261
Kolmogorov-Smirnov Z		1.109
Asymp. Sig. (2-tailed)		.171

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variances^a

Dependent Variable: Indeks Kompresibilitas

F	df1	df2	Sig.
.988	5	12	.464

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Metode Pengeringan + Formula * Metode Pengeringan

Tests of Between-Subjects Effects

Dependent Variable: Indeks Kompresibilitas

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.167 ^a	5	1.433	2.345	.105
Intercept	1300.500	1	1300.500	2128.091	.000
Formula	7.000	2	3.500	5.727	.018
Metode Pengerangan	.056	1	.056	.091	.768
Formula * Metode Pengerangan	.111	2	.056	.091	.914
Error	7.333	12	.611		
Total	1315.000	18			
Corrected Total	14.500	17			

a. R Squared = .494 (Adjusted R Squared = .284)

Multiple Comparisons

Indeks Kompresibilitas

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Amilum	Laktosa	1.5000*	.45134	.006	.5166	2.4834
	Tanpa Pengisi	.5000	.45134	.290	-.4834	1.4834
Laktosa	Amilum	-1.5000*	.45134	.006	-2.4834	-.5166
	Tanpa Pengisi	-1.0000*	.45134	.047	-1.9834	-.0166
Tanpa Pengisi	Amilum	-.5000	.45134	.290	-1.4834	.4834
	Laktosa	1.0000*	.45134	.047	.0166	1.9834

Based on observed means.

The error term is Mean Square(Error) = .611.

*. The mean difference is significant at the .05 level.

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Indeks	Between Groups (Combined)	7.000	2	3.500	7.000	.007
Kompresibilitas						
* Formula	Within Groups	7.500	15	.500		
	Total	14.500	17			

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Indeks	Between Groups (Combined)	.056	1	.056	.062	.807
Kompresibilitas						
* Metode	Within Groups	14.444	16	.903		
Pengeringan	Total	14.500	17			

Lampiran 17. Analisa statistika *K Related samples*

a. Uji tanggapan rasa terhadap rasa

Test Statistics^a

N	20
Chi-Square	10.276
Df	5
Asymp. Sig.	.068

a. *Friedman Test*

b. Uji tanggapan rasa terhadap aroma

Test Statistics^a

N	20
Chi-Square	19.036
Df	5
Asymp. Sig.	.002

a. *Friedman Test*

Test Statistics^d

Asymp. Sig.(2-tailed)	F1	F2	F3	F4	F5	F6
F1	-	0,674	0,071	0,251	0,268	0,071
F2	0,674	-	0,029	0,453	0,366	0,029
F3	0,071	0,029	-	0,005	0,005	1,000
F4	0,251	0,453	0,005	-	0,963	0,005
F5	0,268	0,366	0,005	0,963	-	0,005
F6	0,071	0,029	1,000	0,005	0,005	-

a. Based on negative ranks.

b. The sum of negative ranks equals the sum of positive ranks.

c. Based on positive ranks.

d. Wilcoxon Signed Ranks Test

Marginal Homogeneity Test

	Formula 1 & Formula 2	Formula 2 & Formula 3	Formula 3 & Formula 4	Formula 4 & Formula 5	Formula 5 & Formula 6
Distinct Values	3	3	3	3	2
Off-Diagonal Cases	16	6	11	12	0
Observed MH Statistic	42.000	15.000	32.000	38.000	.000
Mean MH Statistic	43.000	16.500	32.000	32.000	.000
Std. Deviation of MH Statistic	2.345	1.936	2.236	2.121	.000
Std. MH Statistic	-.426	-.775	.000	2.828	.000
Asymp. Sig. (2-tailed)	.670	.439	1.000	.005	1.000

c. Uji tanggapan rasa terhadap tekstur

Test Statistics^a

N	20
Chi-Square	2.973
Df	5
Asymp. Sig.	.704

a. *Friedman Test*