



Lampiran 1. Hasil Determinasi Umbi Porang


KEMENTERIAN RISET TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS DIPONEGORO
FAKULTAS SAINS DAN MATEMATIKA
LAB EKOLOGI & BIOSISTEMATIK JURUSAN BOLOGI
Il. Prof H Soedarto SH Tembalang Semarang, 024 7474754, 024 76480923

Jl. Prof H Soedarto SH Tembalang Semarang, 024 7474754, 024 76480923



HASIL DETERMINASI

Klasifikasi:

Kingdom	: Plantae
Super Divisi	: Spermatophyta (Tumbuhan Berbiyi)
Divisi	: Magnoliophyta (Tumbuhan berbunga)
Kelas	: Magnoliopsida (Dicotyledoneae)
Ordo	: Arales
Famili	: Araceae
Genus	: Amorphophallus
Species	: Amorphophallus oncophyllus
Nama lokal	: Porang

Kunci Determinasi:
1b-2b-3b-4b-6b-7b-9b-10b-11b-12b-13a-Fam 22. Araceae-1b-2a- Genus: Amorphophallus-
Species: *Amorphophallus oncophyllus*

Deskripsi:
Porang, dikenal juga dengan nama Iles-Iles (*Amorphophallus oncophyllus*), Merupakan tumbuhan semak (herba) yang memiliki tinggi 100 – 150 cm dengan umbi yang berada di dalam tanah. Batang tegak, lunak, batang halus berwarna hijau atau hitam belang-belang (totol-totol) putih. Batang tunggal bercabang menjadi tiga batang sekunder dan akan bercabang lagi sekaligus menjadi tangkai daun. Pada setiap pertemuan batang akan tumbuh bintil/katak berwarna coklat kehitam-hitaman sebagai alat perkembangbiakan tanaman Porang. Tinggi tanaman dapat mencapai 1,5 meter sangat tergantung umur dan kesuburan tanah.



Gambar: Tanaman dan Umbi Porang (*Amorphophallus oncophyllus*)

Lampiran 2. Surat Keterangan telah Melaksanakan Penelitian



UNIVERSITAS WAHID HASYIM
FAKULTAS FARMASI
BAGIAN FARMASETIKA

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SURAT KETERANGAN

No. 07/Lab. Farmasetika/C.05/UWH/I/2017

Assalamu'alaikum Wr. Wb.

Yang bertanda tangan dibawah ini, Kepala Bagian Farmasi Fisika & Farmasetika Fakultas Farmasi Universitas Wahid Hasyim Semarang menerangkan bahwa :

Nama : Sulistiyowati
NIM : 105010568
Fakultas : Farmasi

Telah melakukan formulasi di Laboratorium Teknologi Farmasi dalam rangka penelitian dengan judul :

“Pengaruh Penambahan Tepung Umbi Porang (*Amorphophallus oncophyllus*) Sebagai Bahan Penghancur Secara Internal – Eksternal Terhadap Sifat Fisik dan Pelepasan Tablet Paracetamol.”

Demikian surat keterangan ini dibuat untuk dipergunakan semestinya.

Wassalamu'alaikum Wr. Wb.

Semarang, Januari 2017

Ka. Bag Farmasi Fisika & Farmasetika



Zulfa, M.Sc, Apt

Lampiran 3. *Certifikat of Analysis* Paracetamol

BB. 14/0041A
10/2/14 8:27 11/2/14

常熟华港制药有限公司
CHANGSHU HUAGANG PHARMACEUTICALS CO.,LTD
检验报告单

CERTIFICATE ANALYSIS

品名 Product Name	扑热息痛 微粉 Paracetamol Micro grade	包装规格 Packing	25kgs/drum
批号 Batch No.	KLB1312351 ✓	数量 Quantity	1000kg
生产日期 Manufacture Date	04-12-2013	有效期 Expiry Date	03-12-2017
检验标准 Standard	BP2010/USP32		

检验结果
Examination
L/C NO.:225LC30502B
DATE:SEP 9,2013
INVOICE NO.:CSHG131205
DATE:DEC 5,2013

项目 Contents	标准 Specification	结果 Results
性状 Characters	White,crystalline powder,sparingly soluble In water,freely soluble in alcohol,very Slightly soluble in ether and in methylene Chloride.	White,crystalline powder,sparingly soluble in water,freely soluble in alcohol,very slightly Soluble in ether an in methylene Chloride.
鉴别 Identification	A.Melting range 168-172°C B.C.D.E Positive	170.1-170.7°C B.C.D.E Positive
相关物质 Related substance	Impurity J(chloracetanilide) ≤10ppm	<10ppm
	Impurity K(4-aminophenol) ≤50ppm	<50ppm
	Impurity F(4-nitrophenol) ≤0.05%	<0.05%
	Any other impurity ≤0.05%	<0.05%
	Total of other impurity ≤0.1%	<0.1%
氯化物 Chloride	≤0.014%	<0.014%
硫酸盐 Sulfate	≤0.02%	<0.02%
硫化物 Sulfide	Complies	Complies
重金属 Heavy metals	≤0.001%	<0.001%
游离对氨基酚 Free p-Aminophenol	≤0.005%	<0.005%
对氯苯乙酰胺 chloracetanilide	≤0.001%	<0.001%
易炭化物 Readily carbonizable substances	Complies	Complies
溶剂残留 Residual solvent	Residual content of acetic acid ≤0.5%	<0.09%
有机挥发性杂质 Organic volatile impurities	Complies	Complies
水份 Water	≤0.5%	0.09%
炽灼残渣 Residue on ignition	≤0.1%	0.05%
含量 Assay	99.0-101.0%(Dried substance)	100.2%

结论: 按 BP2010/USP32 版检验符合规定
Conclusion: It complies with requirements of the BP2010/USP32

质管部 QA Dept. 检验者: Inspector: Zhao liqin Hong qing



Handwritten signatures of Zhao liqin and Hong qing.



Lampiran 4. Data Hasil Uji Sifat Fisik Granul

1. Formula 1

a. Hasil Uji Pengetapan

Syarat : $\leq 20\%$ (Fassihi dan Kanfer, 1986)

Teruji (W0) : 100 ml

HASIL UJI (W1)

- a. 90 ml (Vol), 10 %
- b. 88 ml (Vol), 12 %
- c. 91 ml (Vol), 9 %

$$\text{Rata-Rata : } \frac{10\%+12\%+9\%}{3} = 10,3\%$$

$$\text{Rumus : } \frac{W_0-W_1}{W_0} \times 100\%$$

Perhitungan

- a. $\frac{100-90}{100} \times 100\% = 10\%$
- b. $\frac{100-88}{100} \times 100\% = 12\%$
- c. $\frac{100-91}{100} \times 100\% = 9\%$

b. Hasil Uji Waktu Alir

Syarat : 100 g/10 detik atau 50 g/5 detik (Fudholi, 1983)

Teruji (bobot) : 50 g

Hasil Uji

1. 50 g (bobot) /02.84 detik (Waktu)
2. 50 g (bobot) /02.73 detik (Waktu)
3. 50 g (bobot) /02.14 detik (Waktu)

$$\text{Rata - rata : } \frac{02,84+02,73+02,14}{3} = 02.57 \text{ detik}$$

c. Hasil Uji Sudut Diam

Syarat : $20^{\circ} - 40^{\circ}$ (Lachman dkk., 1994)

Hasil :

- 1) 3,0 cm (tinggi); 5,5 cm (jari-jari); $28,61^{\circ}$
- 2) 2,8 cm (tinggi); 5,5 cm (jari-jari); $26,98^{\circ}$
- 3) 2,7 cm (tinggi); 5,0 cm (jari-jari); $28,37^{\circ}$

Rata – rata : $\frac{28,61+26,98+28,37}{3} = 27,99^{\circ}$

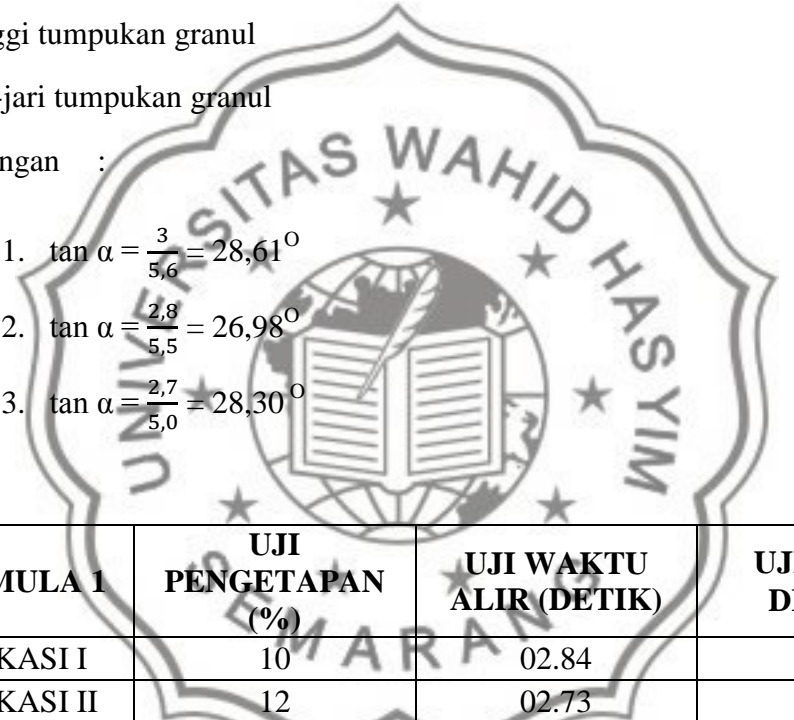
Rumus : $\tan \alpha = \frac{h}{r}$

h = tinggi tumpukan granul

r = jari-jari tumpukan granul

Perhitungan :

1. $\tan \alpha = \frac{3}{5,6} = 28,61^{\circ}$
2. $\tan \alpha = \frac{2,8}{5,5} = 26,98^{\circ}$
3. $\tan \alpha = \frac{2,7}{5,0} = 28,30^{\circ}$



FORMULA 1	UJI PENGETAPAN (%)	UJI WAKTU ALIR (DETIK)	UJI SUDUT DIAM ($^{\circ}$)
REPLIKASI I	10	02.84	28,61
REPLIKASI II	12	02.73	26,98
REPLIKASI III	9	02.14	28,37
RATA-RATA	10,3	02.57	27,99

2. Formula 2

a. Hasil Uji Pengetapan

Syarat : $\leq 20\%$ (Fassihi dan Kanfer, 1986)

Teruji (W0) : 100 ml

Hasil uji (W1)

1. 89 ml (Vol), 11 %
2. 89 ml (Vol), 11 %
3. 90 ml (Vol), 10 %

Rata-Rata : $\frac{11\%+11\%+10\%}{3} = 10,67\%$

Rumus : $\frac{W_0-W_1}{W_0} \times 100\%$

Perhitungan :

a. $\frac{100-89}{100} \times 100\% = 11\%$

b. $\frac{100-89}{100} \times 100\% = 11\%$

c. $\frac{100-90}{100} \times 100\% = 10\%$

b. Hasil Uji Waktu Alir

Syarat : 100 g/10 detik atau 50 g/5 detik (Fudholi, 1983)

Teruji (bobot) : 50 g

Hasil Uji

- a. 50 g (bobot) /02.67 detik (Waktu)
- b. 50 g (bobot) /02.74 detik (Waktu)
- c. 50 g (bobot) /02.68 detik (Waktu)

Rata – rata : $\frac{02,67+02,74+02,68}{3} = 02.69$ detik

c. Hasil Uji Sudut Diam

Syarat : $20^0 - 40^0$ (Lachman dkk., 1994)

Hasil uji :

- a. 2,7 cm (tinggi); 5,25 cm (jari-jari); 27,22°
- b. 2,7 cm (tinggi); 5,25 cm (jari-jari); 27,22°
- c. 2,8 cm (tinggi); 5,35 cm (jari-jari); 27,62°

Rata – rata : $\frac{27,22+27,22+27,62}{3} = 27,35^\circ$

Rumus : $\tan \alpha = \frac{h}{r}$

h = tinggi tumpukan granul

r = jari-jari tumpukan granul

Perhitungan :

4. $\tan \alpha = \frac{2,7}{5,25} = 27,22^\circ$

5. $\tan \alpha = \frac{2,7}{5,25} = 27,22^\circ$

6. $\tan \alpha = \frac{2,8}{5,35} = 27,62^\circ$

FORMULA 2	UJI PENGETAPAN (%)	UJI WAKTU ALIR (DETIK)	UJI SUDUT DIAM (°)
REPLIKASI I	11	02.67	27,22
REPLIKASI II	11	02.74	27,22
REPLIKASI III	10	02.68	27,62
RATA-RATA	11,67	02.69	27,35

3. Formula 3

a. Hasil Uji Pengetapan

Syarat : $\leq 20\%$ (Fassihi dan Kanfer, 1986)

Teruji (W0) : 100 ml

Hasil uji (W1)

a. 93 ml (Vol), 7 %

b. 92 ml (Vol), 8 %

c. 92 ml (Vol), 8 %

$$\text{Rata-Rata : } \frac{7\%+8\%+8\%}{3} = 7,6\%$$

$$\text{Rumus : } \frac{W_0-W_1}{W_0} \times 100\%$$

Perhitungan :

$$\text{a. } \frac{100-93}{100} \times 100\% = 7\%$$

$$\text{b. } \frac{100-92}{100} \times 100\% = 8\%$$

$$\text{c. } \frac{100-92}{100} \times 100\% = 8\%$$

b. Hasil Uji Waktu Alir

Syarat : 100 g/10 detik atau 50 g/5 detik (Fudholi, 1983)

Teruji (bobot) : 50 g

Hasil Uji :

a. 50 g (bobot) /02.69 detik (Waktu)

b. 50 g (bobot) /02.30 detik (Waktu)

c. 50 g (bobot) /02.77 detik (Waktu)

$$\text{Rata - rata : } \frac{02,69+02,30+02,77}{3} = 02.59 \text{ detik}$$

c. Hasil Uji Sudut Diam

Syarat : $20^{\circ} - 40^{\circ}$ (Lachman dkk., 1994)

Hasil uji :

a. 2,6 cm (tinggi); 5,5 cm (jari-jari); $25,3^{\circ}$

b. 2,8 cm (tinggi); 5,5 cm (jari-jari); $26,98^{\circ}$

c. 2,7 cm (tinggi); 5,4 cm (jari-jari); $26,56^{\circ}$

$$\text{Rata - rata : } \frac{25,3+26,98+26,56}{3} = 26,28^{\circ}$$

$$\text{Rumus : } \tan \alpha = \frac{h}{r}$$

h = tinggi tumpukan granul

r = jari-jari tumpukan granul

Perhitungan :

$$\text{d. } \tan \alpha = \frac{2,6}{5,5} = 25,3^{\circ}$$

$$\text{e. } \tan \alpha = \frac{2,8}{5,5} = 26,98^{\circ}$$

$$\text{f. } \tan \alpha = \frac{2,7}{5,4} = 26,56^{\circ}$$

FORMULA 3	UJI PENGETAPAN (%)	UJI WAKTU ALIR (DETIK)	UJI SUDUT DIAM ($^{\circ}$)
REPLIKASI I	7	02.69	25,30
REPLIKASI II	8	02.30	26,98
REPLIKASI III	8	02.77	26,56
RATA-RATA	7,6	02,59	26,28

4. Formula 4

a. Hasil Uji Pengetapan

Syarat : $\leq 20\%$ (Fassihi dan Kanfer, 1986)

Teruji (W0) : 100 ml

Hasil uji (W1)

a. 93 ml (Vol), 7 %

b. 94 ml (Vol), 6 %

c. 94 ml (Vol), 6 %

$$\text{Rata-Rata : } \frac{7\%+6\%+6\%}{3} = \mathbf{6,33\%}$$

$$\text{Rumus : } \frac{W_0-W_1}{W_0} \times 100\%$$

Perhitungan :

a. $\frac{100-93}{100} \times 100\% = 7\%$

b. $\frac{100-94}{100} \times 100\% = 6\%$

c. $\frac{100-94}{100} \times 100\% = 6\%$

b. Hasil Uji Waktu Alir

Syarat : 100 g/10 detik atau 50 g/5 detik (Fudholi, 1983)

Teruji (bobot) : 50 g

Hasil Uji

a. 50 g (bobot) /02.57 detik (Waktu)

b. 50 g (bobot) /02.43 detik (Waktu)

c. 50 g (bobot) /02.51 detik (Waktu)

$$\text{Rata - rata : } \frac{02,57+02,43+02,51}{3} = \mathbf{02.50 \text{ detik}}$$

c. Hasil Uji Sudut Diam

Syarat : $20^{\circ} - 40^{\circ}$ (Lachman dkk., 1994)

Hasil uji

a. 2,8 cm (tinggi); 5,5 cm (jari-jari); $26,98^{\circ}$

b. 2,7 cm (tinggi); 5,25 cm (jari-jari); $27,22^{\circ}$

c. 2,7 cm (tinggi); 5,35 cm (jari-jari); $26,78^{\circ}$

$$\text{Rata - rata : } \frac{26,98+27,22+26,78}{3} = \mathbf{26,99^{\circ}}$$

Rumus : $\tan \alpha = \frac{h}{r}$

h = tinggi tumpukan granul

r = jari-jari tumpukan granul

Perhitungan :

a. $\tan \alpha = \frac{2,8}{5,5} = 26,98^{\circ}$

b. $\tan \alpha = \frac{2,7}{5,25} = 27,22^{\circ}$

c. $\tan \alpha = \frac{2,7}{5,35} = 26,78^{\circ}$

FORMULA 4	UJI PENGETAPAN (%)	UJI WAKTU ALIR (DETIK)	UJI SUDUT DIAM ($^{\circ}$)
REPLIKASI I	7	02.57	26,98
REPLIKASI II	6	02.43	27,22
REPLIKASI III	6	02.51	26,78
RATA-RATA	6,33	02.50	26,99

5. Formula 5

a. Hasil Uji Pengetapan

Syarat : $\leq 20\%$ (Fassih dan Kanfer, 1986)

Teruji (W0) : 100 ml

Hasil uji (W1)

a. 93 ml (Vol), 7 %

b. 93 ml (Vol), 7 %

c. 93 ml (Vol), 7 %

Rata-Rata : $\frac{7\%+7\%+7\%}{3} = 7\%$

$$\text{Rumus : } \frac{W_0 - W_1}{W_0} \times 100\%$$

Perhitungan :

$$\text{d. } \frac{100 - 93}{100} \times 100\% = 7\%$$

$$\text{e. } \frac{100 - 93}{100} \times 100\% = 7\%$$

$$\text{f. } \frac{100 - 93}{100} \times 100\% = 7\%$$

b. Uji Waktu Alir

Syarat : 100 g/10 detik atau 50 g/5 detik (Fudholi, 1983)

Teruji (bobot) : 50 g

Hasil Uji

a. 50 g (bobot) / 02.66 detik (Waktu)

b. 50 g (bobot) / 02.66 detik (Waktu)

c. 50 g (bobot) / 02.73 detik (Waktu)

$$\text{Rata - rata : } \frac{02,66 + 02,66 + 02,73}{3} = \mathbf{02,68 \text{ detik}}$$

c. Hasil Uji Sudut Diam

Syarat : $20^\circ - 40^\circ$ (Lachman dkk., 1994)

Hasil uji

a. 2,8 cm (tinggi); 5,5 cm (jari-jari); $26,98^\circ$

b. 2,8 cm (tinggi); 5,4 cm (jari-jari); $27,41^\circ$

c. 2,9 cm (tinggi); 5,35 cm (jari-jari); $28,46^\circ$

$$\text{Rata - rata : } \frac{26,98 + 27,41 + 28,46}{3} = \mathbf{27,62^\circ}$$

$$\text{Rumus : } \tan \alpha = \frac{h}{r}$$

h = tinggi tumpukan granul

r = jari-jari tumpukan granul

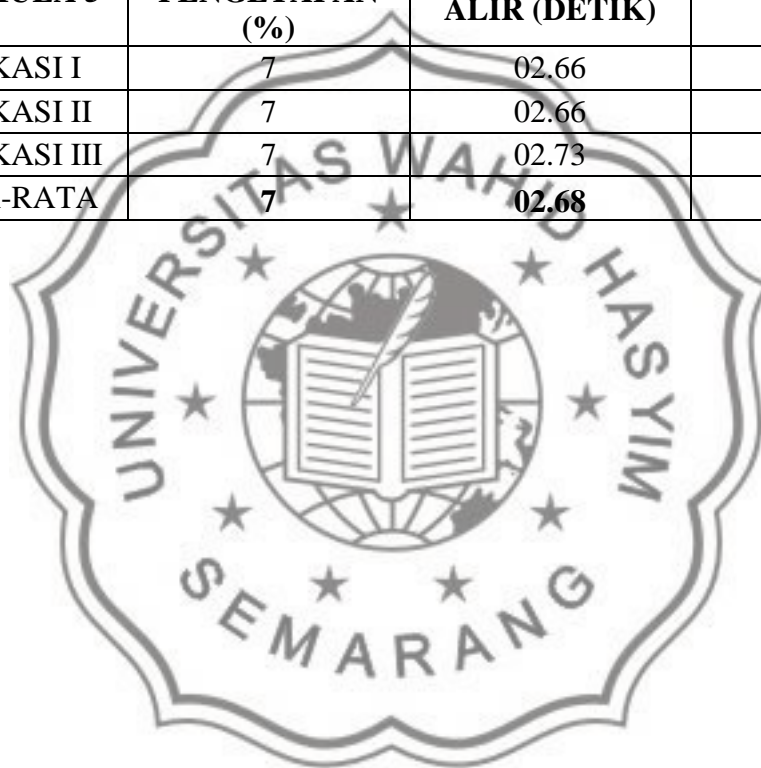
Perhitungan :

a. $\tan \alpha = \frac{2,8}{5,5} = 26,98^{\circ}$

b. $\tan \alpha = \frac{2,8}{5,4} = 27,41^{\circ}$

c. $\tan \alpha = \frac{2,9}{5,35} = 28,46^{\circ}$

FORMULA 5	UJI PENGETAPAN (%)	UJI WAKTU ALIR (DETIK)	UJI SUDUT DIAM ($^{\circ}$)
REPLIKASI I	7	02.66	26,98
REPLIKASI II	7	02.66	27,41
REPLIKASI III	7	02.73	28,46
RATA-RATA	7	02.68	27,62



Lampiran 5. Data Hasil Uji Sifat Fisik Tablet Paracetamol dengan Tepung Porang sebagai Penghancur

1. Hasil Uji Kekerasan Tablet (kg/cm²)

FORMULA	1	2	3	4	5
REPLIKASI					
1	4,56	4,09	4,15	4,34	5,64
2	6,94	5,74	4,99	5,45	6,53
3	4,31	5,63	4,17	4,11	5,61
4	4,86	4,53	4,31	4,88	4,22
5	5,66	4,08	4,92	4,09	4,3
Rata-rata	5,266	4,814	4,508	4,574	5,26

2. Hasil Uji Keseragaman Bobot (mg)

No	F1	F2	F3	F4	F5
	B 20 T :12897	B 20 T :12969	B 20 T :12980	B 20 T :12977	B 20 T :12880
	Rata-rata :644,85	Rata-rata :648,45	Rata-rata :649,00	Rata-rata :648,85	Rata-rata :644,00
1	644	651	652	660	644
2	648	641	659	643	655
3	644	648	647	642	641
4	644	655	648	645	641
5	647	652	651	645	642
6	645	647	643	645	641
7	651	650	648	642	652
8	646	647	647	641	643
9	645	644	646	645	642
10	643	644	655	643	653
11	642	651	642	661	643
12	644	648	643	650	649
13	642	647	648	655	642
14	648	656	644	659	635
15	649	645	643	651	642
16	643	650	659	648	640
17	640	656	655	648	652
18	643	650	642	651	640
19	647	655	648	651	643
20	642	643	650	652	640

3. Hasil Uji Kerapuhan Tablet

Rumus : $\frac{B0-B1}{B0} \times 100\%$

B0

B0 = bobot tablet sebelum uji

B1 = bobot tablet yang masih utuh setelah uji

Formula Replikasi	F1	F2	F3	F4	F5
1	B0 : 12722/20	B0 : 12763/20	B0 : 12763/20	B0 : 12657/20	B0 : 12271/20
	B1 : 3128/ 5	B1 : 6305/ 10	B1 : 12656/ 20	B1 : 9992/ 16	B1 : -
	75.41%	50.60%	0.84%	21.05%	100%
2	B0 : 12788/20	B0 : 12818/20	B0 : 12783/20	B0 : 12858/20	B0 : 12378/20
	B1 : 3761/ 6	B1 : 5717/ 9	B1 : 12673/ 20	B1 : 11945/ 19	B1 : -
	70.59%	55.40%	0.16%	7.10%	100%
3	B0 : 12642/20	B0 : 12818/20	B0 : 12741/20	B0 : 12684/20	B0 : 12322/20
	B1 : 3130/ 5	B1 : 6291/ 10	B1 : 12642/ 20	B1 : 12601/ 20	B1 : -
	75.24%	50.92%	0.78%	0.65%	100%
Rata-rata	73.75%	52.31%	0.59%	9.60%	100%

4. Hasil Uji Waktu Hancur Tablet (menit)

FORMULA REPLIKASI	1	2	3	4	5
1	04.25	12.08	02.48	05.35	74.48
2	04.16	13.18	03.02	06.06	80.51
3	04.32	13.54	02.55	05.48	76.40

Rata-rata	04.24	12.93	02.79	05.63	77.13
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Lampiran 6.

a. Hasil Spektrofotometri UV

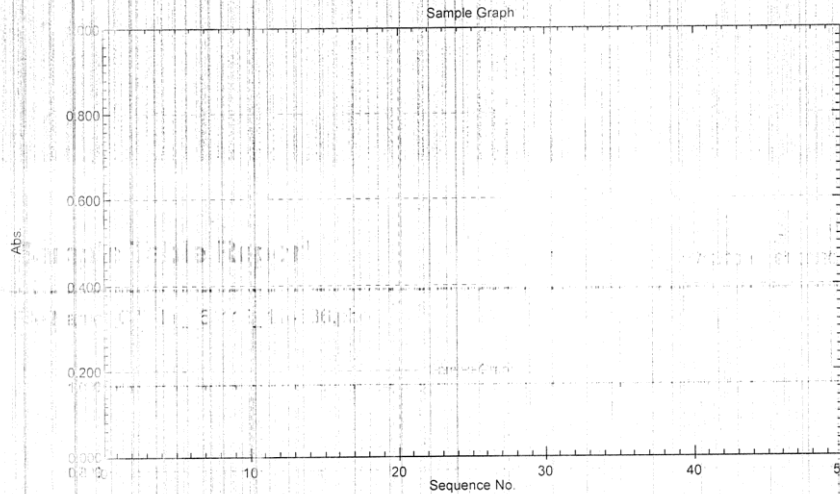
1. Kurva Baku

Sample Table Report

Kurva Batu

11/12/2016 01:06:20 PM

File Name: C:\File_161112_114536.pho



Sample ID	Type	Ex	Conc	WL243.0	Comments
1	3 ppm	Unknown	****	0.290	
2	4.5 ppm	Unknown	****	0.392	
3	6 ppm	Unknown	****	0.471	
4	7.5 ppm	Unknown	****	0.559	
5	9 ppm	Unknown	****	0.640	
6	10.5 ppm	Unknown	****	0.755	

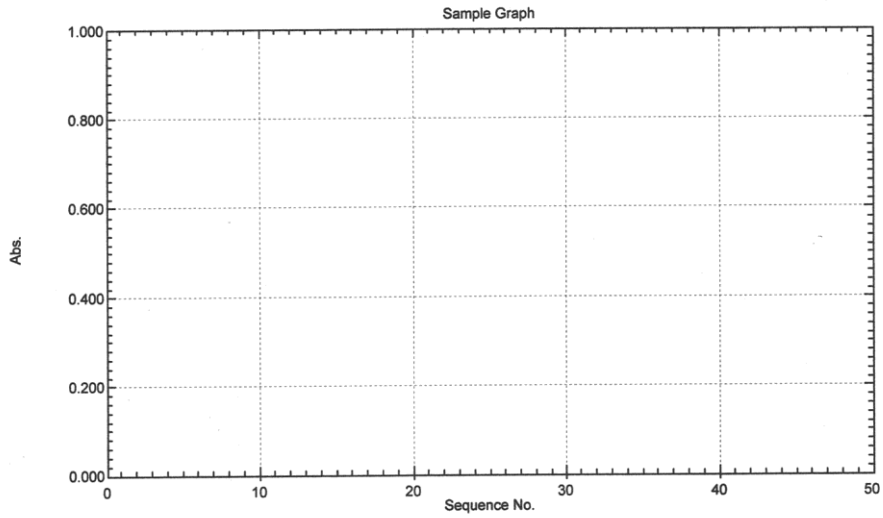
2. Uji Disolusi Tablet Parasetamol dengan Tepung Porang sebagai Penghancur

Sample Table Report

Uji Pelepasan Tablet

12/09/2016 04:18:46 PM

File Name: C:\Users\HP\Downloads\SULIS.pho



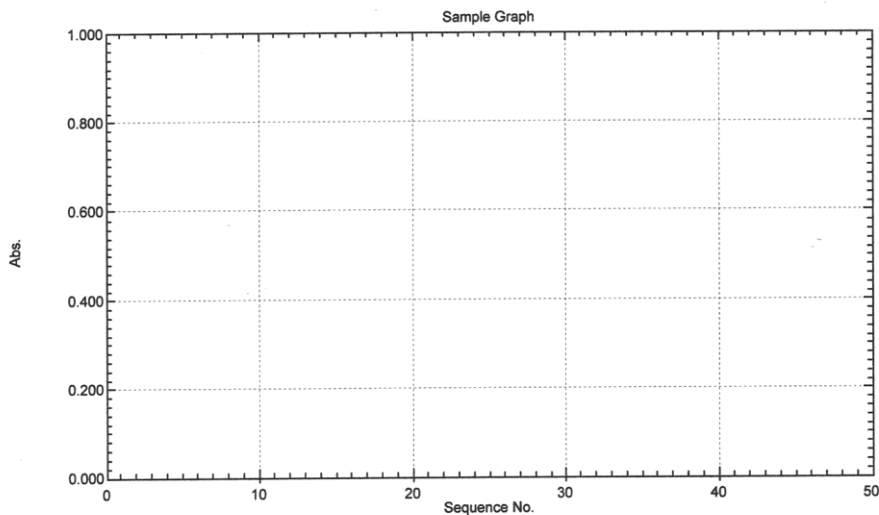
Sample Table						
	Sample ID	Type	Ex	Conc	WL243.0	Comments
1	F1 R1	Unknown		*****	4.000	
2	F1 R2	Unknown		*****	4.000	
3	F1 R3	Unknown		*****	4.000	
4	F1 R4	Unknown		*****	4.000	
5	F1 R5	Unknown		*****	4.000	
6	F1 R1 P10X	Unknown		*****	3.213	
7	F1 R2 P10X	Unknown		*****	3.223	
8	F1 R3 P10X	Unknown		*****	3.194	
9	F1 R4 P10X	Unknown		*****	3.275	
10	F1 R5 P10X	Unknown		*****	3.375	
11	F1 R1 P50X	Unknown		*****	0.692	
12	F1 R2 P50X	Unknown		*****	0.676	
13	F1 R3 P50X	Unknown		*****	0.680	
14	F1 R4 P50X	Unknown		*****	0.671	
15	F1 R5 P50X	Unknown		*****	0.630	
16	F2 R1 P50X	Unknown		*****	0.648	
17	F2 R2 P50X	Unknown		*****	0.644	
18	F2 R3 P50X	Unknown		*****	0.672	

Sample Table Report

Uji Pelepasan Tablet

12/09/2016 04:18:46 PM

File Name: C:\Users\HP\Downloads\SULIS.pho



Sample Table

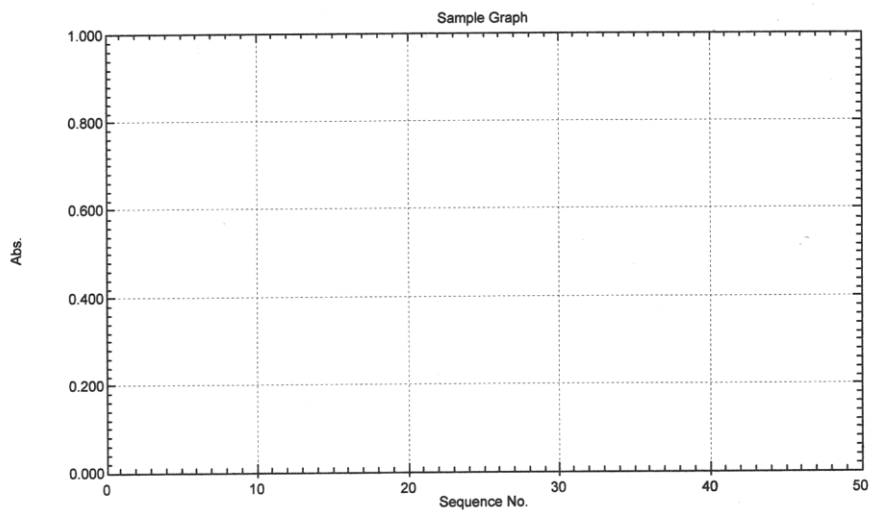
	Sample ID	Type	Ex	Conc	WL243.0	Comments
19	F2 R4 P50X	Unknown		*****	0.647	
20	F2 R5 P50X	Unknown		*****	0.675	
21	F3 R1 P50X	Unknown		*****	0.643	
22	F3 R2 P50X	Unknown		*****	0.619	
23	F3 R3 P50X	Unknown		*****	0.581	
24	F3 R4 P50X	Unknown		*****	0.631	
25	F3 R5 P50X	Unknown		*****	0.609	
26	F4 R1 P50X	Unknown		*****	0.684	
27	F4 R2 P50X	Unknown		*****	0.714	
28	F4 R3 P50X	Unknown		*****	0.683	
29	F4 R4 P50X	Unknown		*****	0.647	
30	F4 R5 P50X	Unknown		*****	0.673	
31	F5 R1 P50X	Unknown		*****	0.109	
32	F5 R2 P50X	Unknown		*****	0.121	
33	F5 R3 P50X	Unknown		*****	0.115	
34	F5 R4 P50X	Unknown		*****	0.152	
35	F5 R5 P50X	Unknown		*****	0.153	
36	F5 R1 P25X	Unknown		*****	0.216	

Sample Table Report

Uji Pelepasan Tablet

12/09/2016 04:18:46 PM

File Name: C:\Users\HP\Downloads\SULIS.pho



Sample Table	Sample ID	Type	Ex	Conc	WL243.0	Comments
37	F5 R2 P25X	Unknown		*****	0.219	
38	F5 R3 P25X	Unknown		*****	0.215	
39	F5 R4 P25X	Unknown		*****	0.308	
40	F5 R5 P25X	Unknown		*****	0.291	
41						

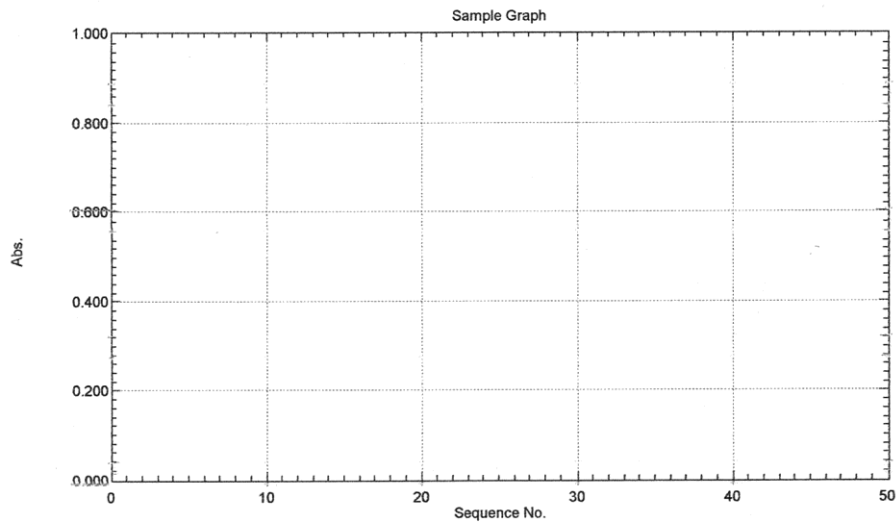
3. Uji Kadar Parasetamol dalam Tablet

Sample Table Report

Uji Kadar Parasetamol

08/09/2017 04:15:36 PM

File Name: C:\Users\HP\Documents\File_170809_144818.pho



Sample Table

	Sample ID	Type	Ex	Conc	WL243.0	Comments
1	F 1 R 1 P500X	Unknown		*****	0.309	
2	F 1 R 2 P500X	Unknown		*****	0.298	
3	F 1 R 3 P500X	Unknown		*****	0.281	
4	F 1 R 4 P500X	Unknown		*****	0.310	
5	F 1 R 5 P500X	Unknown		*****	0.358	
6	F 1 R 6 P500X	Unknown		*****	0.373	
7	F 2 R 1 P500X	Unknown		*****	0.398	
8	F 2 R 2 P500X	Unknown		*****	0.417	
9	F 2 R 3 P500X	Unknown		*****	0.369	
10	F 2 R 4 P500X	Unknown		*****	0.309	
11	F 2 R 5 P500X	Unknown		*****	0.353	
12	F 2 R 6 P500X	Unknown		*****	0.434	
13	F 3 R 1 P500X	Unknown		*****	0.383	
14	F 3 R 2 P500X	Unknown		*****	0.332	
15	F 3 R 3 P500X	Unknown		*****	0.464	
16	F 3 R 4 P500X	Unknown		*****	0.471	
17	F 3 R 5 P500X	Unknown		*****	0.413	
18	F 3 R 6 P500X	Unknown		*****	0.483	

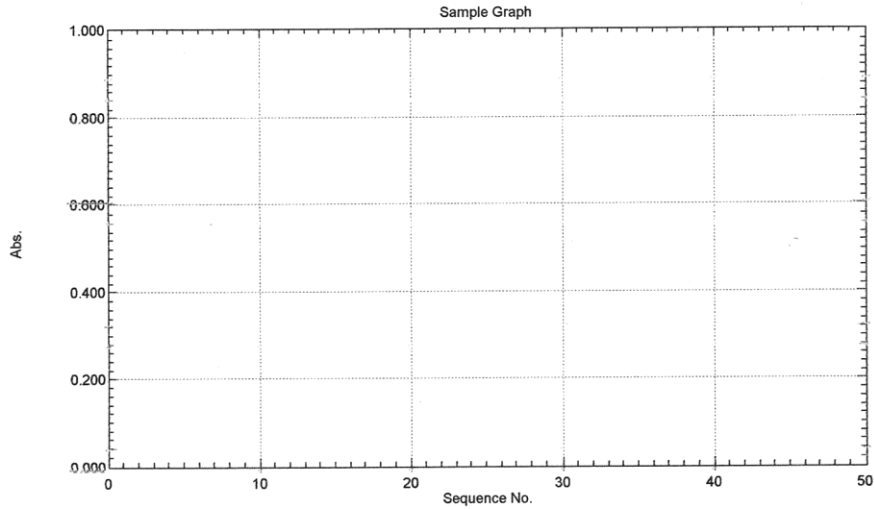
Sample Table Report

Uji Kadar Parasetamol

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2

File Name: C:\Users\HP\Documents\File_170809_144818.pho



Sample ID	Type	Ex	Conc	WL243.0	Comments
19	F 4 R 1 P500X		*****	0.424	
20	F 4 R 2 P500X		*****	0.381	
21	F 4 R 3 P500X		*****	0.366	
22	F 4 R 4 P500X		*****	0.375	
23	F 4 R 5 P500X		*****	0.396	
24	F 4 R 6 P500X		*****	0.356	
25	F 5 R 1 P500X		*****	0.380	
26	F 5 R 2 P500X		*****	0.401	
27	F 5 R 3 P500X		*****	0.460	
28	F 5 R 4 P500X		*****	0.382	
29	F 5 R 5 P500X		*****	0.425	
30	F 5 R 6 P500X		*****	0.403	
31					

Lampiran 7. Data Hasil Uji Sifat Kimia dan Pelepasan Tablet Paracetamol dengan Tepung Porang sebagai Penghancur

1. Kurva Baku Paracetamol

Konsentrasi	Absorbansi
3,0 ppm	0,290
4,5 ppm	0,392
6,0 ppm	0,471
7,5 ppm	0,559
9,0 ppm	0,640
10,5 ppm	0,755

Berdasarkan perhitungan regresi linier didapatkan hasil nilai:

$$A = 0,1119$$

$$B = 0,0601$$

$$r = 0,9985$$

Maka persamaan kurva baku paracetamol yang diperoleh adalah:

$$Y = BX + A$$

$$Y = 0,0601X + 0,1119$$

2. Data Hasil Uji Disolusi atau Pelepasan Tablet Paracetamol

Formula Replikasi	I		II		III		IV		V	
	Abs	(%)	Abs	(%)	Abs	(%)	Abs	(%)	Abs	(%)
1	0,692 (50x)	87	0,648 (50x)	80	0,643 (50x)	80	0,684 (50x)	86	0,216 (25x)	8
2	0,676 (50x)	84	0,644 (50x)	80	0,619 (50x)	76	0,714 (50x)	90	0,219 (25x)	8
3	0,680 (50x)	85	0,672 (50x)	84	0,581 (50x)	70	0,683 (50x)	86	0,215 (25x)	8
4	0,671 (50x)	84	0,647 (50x)	80	0,631 (50x)	78	0,647 (50x)	80	0,308 (25x)	15
5	0,630 (50x)	78	0,675 (50x)	84	0,609 (50x)	74	0,673 (50x)	84	0,291 (25x)	13
X	84		82		75		85		10	
SD	± 3,36		± 2,19		± 3,85		± 3,63		± 3,36	
CV (%)	4		2,67		5,13		4,27		33,6	

3. Data Hasil Pengujian Kadar Tablet Paracetamol

Replikasi	F I		F II		F III		F IV		F V	
	Abs	(mg)	Abs	(mg)	Abs	(mg)	Abs	(mg)	Abs	(mg)
1	0,309 (500x)	328	0,398 (500x)	476	0,383 (500x)	451	0,424 (500x)	519	0,380 (500x)	446
2	0,298 (500x)	309	0,417 (500x)	507	0,332 (500x)	366	0,381 (500x)	447	0,401 (500x)	481
3	0,281 (500x)	281	0,427 (500x)	427	0,464 (500x)	585	0,366 (500x)	422	0,460 (500x)	579
4	0,310 (500x)	329	0,309 (500x)	327	0,471 (500x)	597	0,375 (500x)	437	0,382 (500x)	449
5	0,358 (500x)	409	0,353 (500x)	401	0,413 (500x)	501	0,396 (500x)	473	0,425 (500x)	520
6	0,373 (500x)	434	0,434 (500x)	535	0,483 (500x)	617	0,356 (500x)	406	0,403 (500x)	484
X (mg)	2090		2673		3117		2704		2959	
Rata-rata (mg)	348		445,5		519,5		451		493	
SD	59,81		76,27		98,39		40,46		49,99	
KV	17,19%		17,12%		18,94%		8,97%		10,14%	

Lampiran 8. Hasil Uji Statistika

a. Keseragaman Bobot

Descriptives						
	Formula		Statistic	Std. Error		
Keseragaman_bobot	F1	Mean	644.85	.621		
		95% Confidence Interval for Mean	Lower Bound 643.55	Upper Bound 646.15		
		5% Trimmed Mean	644.78			
		Median	644.00			
		Variance	7.713			
		Std. Deviation	2.777			
		Minimum	640			
		Maximum	651			
		Range	11			
		Interquartile Range	4			
		Skewness	.500	.512		
		Kurtosis	-.191	.992		
			F2	Mean	649.00	.987
				95% Confidence Interval for Mean	Lower Bound 646.93	Upper Bound 651.07
5% Trimmed Mean	649.06					
Median	649.00					
Variance	19.474					
Std. Deviation	4.413					
Minimum	641					
Maximum	656					
Range	15					
Interquartile Range	6					
Skewness	.065			.512		
Kurtosis	-.785			.992		
	F3			Mean	648.50	1.184
				95% Confidence Interval for Mean	Lower Bound 646.02	Upper Bound 650.98
		5% Trimmed Mean	648.28			

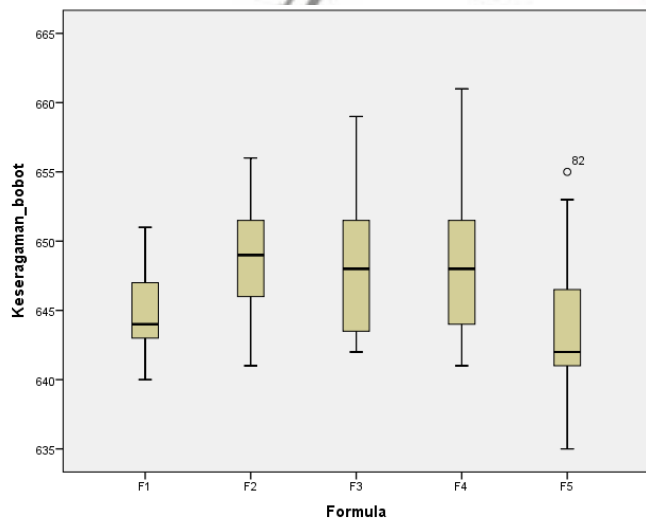
	Median		648.00	
	Variance		28.053	
	Std. Deviation		5.296	
	Minimum		642	
	Maximum		659	
	Range		17	
	Interquartile Range		9	
	Skewness		.694	.512
	Kurtosis		-.340	.992
F4	Mean		648.85	1.379
	95% Confidence Interval for Mean	Lower Bound Upper Bound	645.96 651.74	
	5% Trimmed Mean		648.61	
	Median		648.00	
	Variance		38.029	
	Std. Deviation		6.167	
	Minimum		641	
	Maximum		661	
	Range		20	
	Interquartile Range		8	
	Skewness		.689	.512
	Kurtosis		-.498	.992
F5	Mean		644.00	1.181
	95% Confidence Interval for Mean	Lower Bound Upper Bound	641.53 646.47	
	5% Trimmed Mean		643.89	
	Median		642.00	
	Variance		27.895	
	Std. Deviation		5.282	
	Minimum		635	
	Maximum		655	
	Range		20	
	Interquartile Range		7	
	Skewness		.862	.512
	Kurtosis		-.043	.992

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Keseragaman_bobot	F1	.170	20	.131	.961	20	.573
	F2	.113	20	.200 [*]	.959	20	.518
	F3	.188	20	.063	.913	20	.072
	F4	.184	20	.075	.912	20	.070
	F5	.275	20	.000	.855	20	.006

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

a. Lilliefors Significance Correction



Ranks

	Formula	N	Mean Rank
Keseragaman_bobot	F1	20	40.15
	F2	20	63.43
	F3	20	58.43
	F4	20	58.83
	F5	20	31.68
	Total	100	

Test Statistics^{a,b}

	Keseragaman_b obot
Chi-Square	18.188
df	4
Asymp. Sig.	.001

a. Kruskal Wallis Test

b. Grouping Variable: Formula

Mann-Whitney Test**Ranks**

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F1	20	14.93	298.50
	F2	20	26.08	521.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	88.500
Wilcoxon W	298.500
Z	-3.029
Asymp. Sig. (2-tailed)	.002
Exact Sig. [2*(1-tailed Sig.)]	.002 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F1	20	16.48	329.50
	F3	20	24.53	490.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	119.500
Wilcoxon W	329.500
Z	-2.190
Asymp. Sig. (2-tailed)	.028
Exact Sig. [2*(1-tailed Sig.)]	.028 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F1	20	16.68	333.50
	F4	20	24.33	486.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	123.500
Wilcoxon W	333.500
Z	-2.080
Asymp. Sig. (2-tailed)	.038
Exact Sig. [2*(1-tailed Sig.)]	.038 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F1	20	23.58	471.50
	F5	20	17.43	348.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	138.500
Wilcoxon W	348.500
Z	-1.674
Asymp. Sig. (2-tailed)	.094
Exact Sig. [2*(1-tailed Sig.)]	.096 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F2	20	21.58	431.50
	F3	20	19.43	388.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	178.500
Wilcoxon W	388.500
Z	-.584
Asymp. Sig. (2-tailed)	.559
Exact Sig. [2*(1-tailed Sig.)]	.565 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F2	20	21.13	422.50
	F4	20	19.88	397.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	187.500
Wilcoxon W	397.500
Z	-.339
Asymp. Sig. (2-tailed)	.734
Exact Sig. [2*(1-tailed Sig.)]	.738 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F2	20	26.15	523.00
	F5	20	14.85	297.00
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	87.000
Wilcoxon W	297.000
Z	-3.065
Asymp. Sig. (2-tailed)	.002
Exact Sig. [2*(1-tailed Sig.)]	.002 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F3	20	20.33	406.50
	F4	20	20.68	413.50
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	196.500
Wilcoxon W	406.500
Z	-.095
Asymp. Sig. (2-tailed)	.924
Exact Sig. [2*(1-tailed Sig.)]	.925 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F3	20	25.65	513.00
	F5	20	15.35	307.00
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	97.000
Wilcoxon W	307.000
Z	-2.799
Asymp. Sig. (2-tailed)	.005
Exact Sig. [2*(1-tailed Sig.)]	.005 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Keseragaman_bobot	F4	20	25.45	509.00
	F5	20	15.55	311.00
	Total	40		

Test Statistics^a

	Keseragaman_b obot
Mann-Whitney U	101.000
Wilcoxon W	311.000
Z	-2.689
Asymp. Sig. (2-tailed)	.007
Exact Sig. [2*(1-tailed Sig.)]	.007 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

b. Kekerasan Tablet

Descriptives

	Formula	Statistic	Std. Error		
Kekerasan_Tablet	F1	Mean	5.2660	.47617	
		95% Confidence Interval for Lower Bound	3.9439		
		Mean	Upper Bound	6.5881	
		5% Trimmed Mean	5.2261		
		Median	4.8600		
		Variance	1.134		
		Std. Deviation	1.06474		
		Minimum	4.31		
		Maximum	6.94		
		Range	2.63		
		Interquartile Range	1.87		
		Skewness	1.194	.913	
		Kurtosis	.741	2.000	
			F2	Mean	4.8140
95% Confidence Interval for Lower Bound	3.8001				
Mean	Upper Bound			5.8279	
5% Trimmed Mean	4.8033				
Median	4.5300				
Variance	.667				
Std. Deviation	.81654				
Minimum	4.08				

	Maximum	5.74	
	Range	1.66	
	Interquartile Range	1.60	
	Skewness	.413	.913
	Kurtosis	-3.079	2.000
F3	Mean	4.5080	.18489
	95% Confidence Interval for Lower Bound	3.9947	
	Mean	Upper Bound	5.0213
	5% Trimmed Mean	4.5011	
	Median	4.3100	
	Variance	.171	
	Std. Deviation	.41342	
	Minimum	4.15	
	Maximum	4.99	
	Range	.84	
	Interquartile Range	.79	
	Skewness	.529	.913
	Kurtosis	-3.131	2.000
F4	Mean	4.5740	.26128
	95% Confidence Interval for Lower Bound	3.8486	
	Mean	Upper Bound	5.2994
	5% Trimmed Mean	4.5522	
	Median	4.3400	
	Variance	.341	
	Std. Deviation	.58423	
	Minimum	4.09	
	Maximum	5.45	
	Range	1.36	
	Interquartile Range	1.07	
	Skewness	.992	.913
	Kurtosis	-.470	2.000
F5	Mean	5.2600	.44062
	95% Confidence Interval for Lower Bound	4.0366	
	Mean	Upper Bound	6.4834
	5% Trimmed Mean	5.2472	

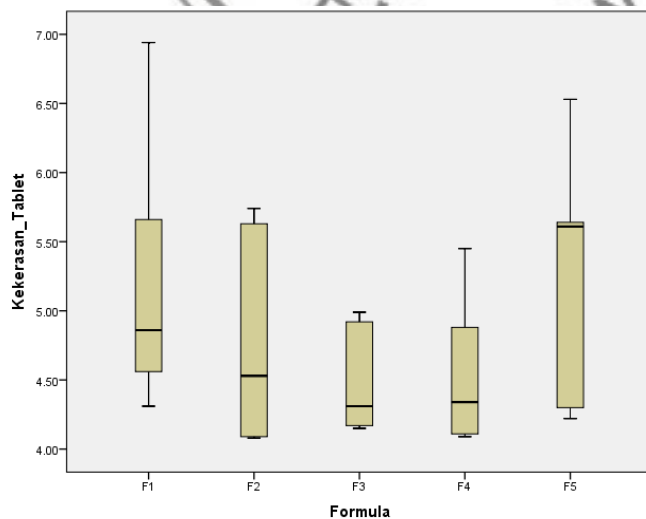
Median	5.6100	
Variance	.971	
Std. Deviation	.98527	
Minimum	4.22	
Maximum	6.53	
Range	2.31	
Interquartile Range	1.83	
Skewness	.059	.913
Kurtosis	-1.823	2.000

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Kekerasan_Tablet	F1	.249	5	.200*	.894	5	.378
	F2	.241	5	.200*	.816	5	.108
	F3	.284	5	.200*	.799	5	.080
	F4	.256	5	.200*	.870	5	.266
	F5	.239	5	.200*	.890	5	.356

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

a. Lilliefors Significance Correction



Oneway

Test of Homogeneity of Variances

Kekerasan_Tablet

Levene Statistic	df1	df2	Sig.
1.838	4	20	.161

ANOVA

Kekerasan_Tablet

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.648	4	.662	1.008	.427
Within Groups	13.134	20	.657		
Total	15.782	24			

c. Kerapuhan Tablet

Descriptives^a

	Formula	Statistic	Std. Error
Kerapuhan_tablet	F1	Mean	73.7467
		95% Confidence Interval for Mean	1.57910
		Lower Bound	66.9524
		Upper Bound	80.5410
		5% Trimmed Mean	.
		Median	75.2400
		Variance	7.481
		Std. Deviation	2.73507
		Minimum	70.59
		Maximum	75.41
		Range	4.82
		Interquartile Range	.
		Skewness	-1.725
	Kurtosis	.	.
F2		Mean	52.3067
		95% Confidence Interval for Mean	1.54942
		Lower Bound	45.6400
		Upper Bound	58.9733
	5% Trimmed Mean	.	.

	Median		50.9200	
	Variance		7.202	
	Std. Deviation		2.68368	
	Minimum		50.60	
	Maximum		55.40	
	Range		4.80	
	Interquartile Range		.	
	Skewness		1.704	1.225
	Kurtosis		.	.
F3	Mean		.5933	.21736
	95% Confidence Interval for Mean	Lower Bound Upper Bound	- .3419 1.5285	
	5% Trimmed Mean		.	
	Median		.7800	
	Variance		.142	
	Std. Deviation		.37647	
	Minimum		.16	
	Maximum		.84	
	Range		.68	
	Interquartile Range		.	
	Skewness		-1.683	1.225
	Kurtosis		.	.
F4	Mean		9.6000	6.02017
	95% Confidence Interval for Mean	Lower Bound Upper Bound	-16.3027 35.5027	
	5% Trimmed Mean		.	
	Median		7.1000	
	Variance		108.728	
	Std. Deviation		10.42725	
	Minimum		.65	
	Maximum		21.05	
	Range		20.40	
	Interquartile Range		.	
	Skewness		1.017	1.225
	Kurtosis		.	.

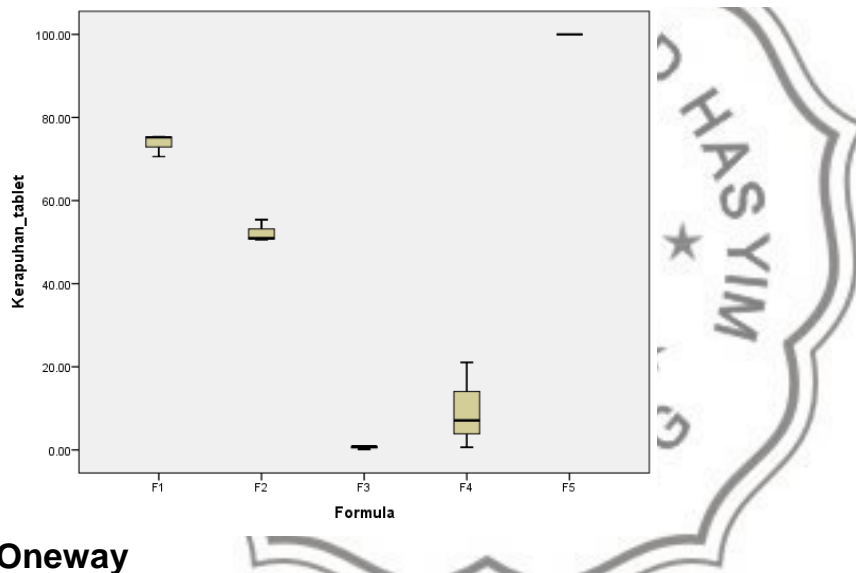
a. Kerapuhan_tablet is constant when Formula = F5. It has been omitted.

Tests of Normality^b

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Kerapuhan_tablet	F1	.374	3	.	.776	3	.059
	F2	.364	3	.	.800	3	.114
	F3	.357	3	.	.816	3	.152
	F4	.261	3	.	.957	3	.601

a. Lilliefors Significance Correction

b. Kerapuhan_tablet is constant when Formula = F5. It has been omitted.



Oneway

Descriptives

Kerapuhan_tablet

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
F1	3	73.7467	2.73507	1.57910	66.9524	80.5410	70.59	75.41
F2	3	52.3067	2.68368	1.54942	45.6400	58.9733	50.60	55.40
F3	3	.5933	.37647	.21736	-.3419	1.5285	.16	.84
F4	3	9.6000	10.42725	6.02017	-16.3027	35.5027	.65	21.05
F5	3	100.0000	.00000	.00000	100.0000	100.0000	100.00	100.00
Total	15	47.2493	39.24358	10.13265	25.5170	68.9817	.16	100.00

Oneway

Descriptives

Kerapuhan_tablet

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
F1	3	73.7467	2.73507	1.57910	66.9524	80.5410	70.59	75.41
F2	3	52.3067	2.68368	1.54942	45.6400	58.9733	50.60	55.40
F3	3	.5933	.37647	.21736	-.3419	1.5285	.16	.84
F4	3	9.6000	10.42725	6.02017	-16.3027	35.5027	.65	21.05
F5	3	100.0000	.00000	.00000	100.0000	100.0000	100.00	100.00
Total	15	47.2493	39.24358	10.13265	25.5170	68.9817	.16	100.00

Test of Homogeneity of Variances

Kerapuhan_tablet

Levene Statistic	df1	df2	Sig.
6.163	4	10	.009

ANOVA

Kerapuhan_tablet

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21313.718	4	5328.430	215.635	.000
Within Groups	247.104	10	24.710		
Total	21560.822	14			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Kerapuhan_tablet

Games-Howell

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	21.44000 [*]	2.21230	.003	11.6032	31.2768
	F3	73.15333 [*]	1.59399	.001	61.3916	84.9151
	F4	64.14667 [*]	6.22383	.020	22.3942	105.8991
	F5	-26.25333 [*]	1.57910	.011	-38.4031	-14.1036
F2	F1	-21.44000 [*]	2.21230	.003	-31.2768	-11.6032
	F3	51.71333 [*]	1.56459	.002	40.1863	63.2404
	F4	42.70667 [*]	6.21637	.048	.8194	84.5939
	F5	-47.69333 [*]	1.54942	.003	-59.6148	-35.7719
F3	F1	-73.15333 [*]	1.59399	.001	-84.9151	-61.3916
	F2	-51.71333 [*]	1.56459	.002	-63.2404	-40.1863
	F4	-9.00667	6.02410	.645	-55.2184	37.2050
	F5	-99.40667 [*]	.21736	.000	-101.0790	-97.7343
F4	F1	-64.14667 [*]	6.22383	.020	-105.8991	-22.3942
	F2	-42.70667 [*]	6.21637	.048	-84.5939	-.8194
	F3	9.00667	6.02410	.645	-37.2050	55.2184
	F5	-90.40000 [*]	6.02017	.014	-136.7199	-44.0801
F5	F1	26.25333 [*]	1.57910	.011	14.1036	38.4031
	F2	47.69333 [*]	1.54942	.003	35.7719	59.6148
	F3	99.40667 [*]	.21736	.000	97.7343	101.0790
	F4	90.40000 [*]	6.02017	.014	44.0801	136.7199

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

d. Waktu Hancur Tablet

Descriptives

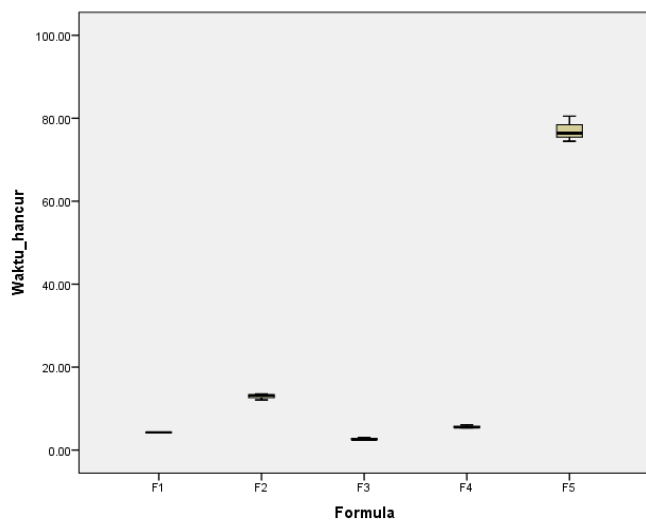
	Formula		Statistic	Std. Error		
Waktu_hancur	F1	Mean	4.2433	.04631		
		95% Confidence Interval for Mean	Lower Bound 4.0441			
			Upper Bound 4.4426			
		5% Trimmed Mean	.			
		Median	4.2500			
		Variance	.006			
		Std. Deviation	.08021			
		Minimum	4.16			
		Maximum	4.32			
		Range	.16			
		Interquartile Range	.			
		Skewness	-.371	1.225		
		Kurtosis	.	.		
			F2	Mean	12.9333	.43914
				95% Confidence Interval for Mean	Lower Bound 11.0439	
	Upper Bound 14.8228					
5% Trimmed Mean	.					
Median	13.1800					
Variance	.579					
Std. Deviation	.76061					
Minimum	12.08					
Maximum	13.54					
Range	1.46					
Interquartile Range	.					
Skewness	-1.306			1.225		
Kurtosis	.			.		
	F3			Mean	2.6833	.16954
				95% Confidence Interval for Mean	Lower Bound 1.9539	
			Upper Bound 3.4128			
		5% Trimmed Mean	.			
		Median	2.5500			
		Variance	.086			

	Std. Deviation	.29366	
	Minimum	2.48	
	Maximum	3.02	
	Range	.54	
	Interquartile Range	.	
	Skewness	1.622	1.225
	Kurtosis	.	.
F4	Mean	5.6300	.21825
	95% Confidence Interval for Mean	Lower Bound 4.6909 Upper Bound 6.5691	
	5% Trimmed Mean	.	
	Median	5.4800	
	Variance	.143	
	Std. Deviation	.37802	
	Minimum	5.35	
	Maximum	6.06	
	Range	.71	
	Interquartile Range	.	
	Skewness	1.504	1.225
	Kurtosis	.	.
F5	Mean	77.1300	1.77857
	95% Confidence Interval for Mean	Lower Bound 69.4774 Upper Bound 84.7826	
	5% Trimmed Mean	.	
	Median	76.4000	
	Variance	9.490	
	Std. Deviation	3.08057	
	Minimum	74.48	
	Maximum	80.51	
	Range	6.03	
	Interquartile Range	.	
	Skewness	1.006	1.225
	Kurtosis	.	.

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Waktu_hancur	F1	.200	3	.	.995	3	.862
	F2	.294	3	.	.921	3	.456
	F3	.342	3	.	.845	3	.228
	F4	.321	3	.	.882	3	.330
	F5	.260	3	.	.958	3	.605

a. Lilliefors Significance Correction



Oneway

Descriptives

Waktu_hancur

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
F1	3	4.2433	.08021	.04631	4.0441	4.4426	4.16	4.32
F2	3	12.9333	.76061	.43914	11.0439	14.8228	12.08	13.54
F3	3	2.6833	.29366	.16954	1.9539	3.4128	2.48	3.02
F4	3	5.6300	.37802	.21825	4.6909	6.5691	5.35	6.06
F5	3	77.1300	3.08057	1.77857	69.4774	84.7826	74.48	80.51
Total	15	20.5240	29.54624	7.62881	4.1618	36.8862	2.48	80.51

Test of Homogeneity of Variances

Waktu_hancur

Levene Statistic	df1	df2	Sig.
6.078	4	10	.010

ANOVA

Waktu_hancur

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12201.115	4	3050.279	1480.143	.000
Within Groups	20.608	10	2.061		
Total	12221.723	14			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Waktu_hancur

Games-Howell

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	-8.69000 [*]	.44158	.007	-12.0038	-5.3762
	F3	1.56000 [*]	.17575	.026	.3925	2.7275
	F4	-1.38667	.22311	.064	-2.9491	.1757
	F5	-72.88667 [*]	1.77917	.002	-86.5545	-59.2188
F2	F1	8.69000 [*]	.44158	.007	5.3762	12.0038
	F3	10.25000 [*]	.47073	.002	7.4420	13.0580
	F4	7.30333 [*]	.49039	.003	4.6577	9.9490
	F5	-64.19667 [*]	1.83198	.001	-76.6558	-51.7375
F3	F1	-1.56000 [*]	.17575	.026	-2.7275	-.3925
	F2	-10.25000 [*]	.47073	.002	-13.0580	-7.4420
	F4	-2.94667 [*]	.27637	.003	-4.2151	-1.6782
	F5	-74.44667 [*]	1.78663	.002	-87.9144	-60.9790
F4	F1	1.38667	.22311	.064	-.1757	2.9491
	F2	-7.30333 [*]	.49039	.003	-9.9490	-4.6577
	F3	2.94667 [*]	.27637	.003	1.6782	4.2151
	F5	-71.50000 [*]	1.79191	.002	-84.8326	-58.1674
F5	F1	72.88667 [*]	1.77917	.002	59.2188	86.5545

F2	64.19667 [*]	1.83198	.001	51.7375	76.6558
F3	74.44667 [*]	1.78663	.002	60.9790	87.9144
F4	71.50000 [*]	1.79191	.002	58.1674	84.8326

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

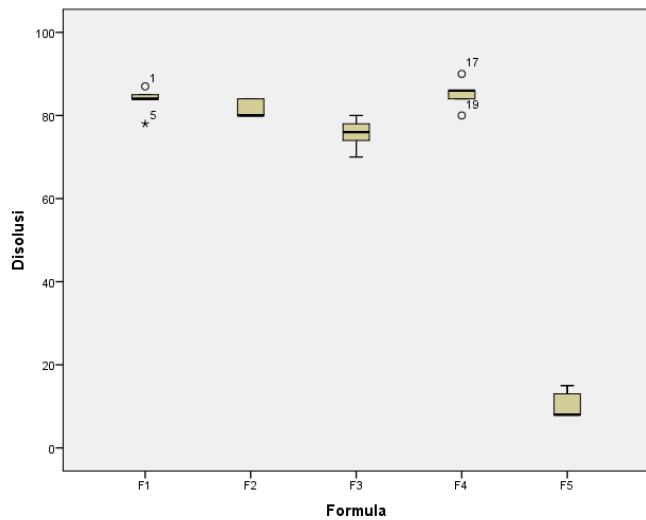
e. Disolusi Tablet

Descriptives

	Formula	Statistic	Std. Error		
Disolusi	F1	Mean	83.60	1.503	
		95% Confidence Interval for Mean	Lower Bound	79.43	
			Upper Bound	87.77	
		5% Trimmed Mean		83.72	
		Median		84.00	
		Variance		11.300	
		Std. Deviation		3.362	
		Minimum		78	
		Maximum		87	
		Range		9	
		Interquartile Range		5	
		Skewness		-1.464	.913
		Kurtosis		2.974	2.000
		F2	Mean	81.60	.980
	95% Confidence Interval for Mean		Lower Bound	78.88	
			Upper Bound	84.32	
	5% Trimmed Mean			81.56	
	Median			80.00	
	Variance			4.800	
	Std. Deviation			2.191	
Minimum			80		
Maximum			84		
Range			4		
Interquartile Range			4		
Skewness			.609	.913	
Kurtosis		-3.333	2.000		

F3	Mean		75.60	1.720
	95% Confidence Interval for Mean	Lower Bound	70.82	
		Upper Bound	80.38	
	5% Trimmed Mean		75.67	
	Median		76.00	
	Variance		14.800	
	Std. Deviation		3.847	
	Minimum		70	
	Maximum		80	
	Range		10	
	Interquartile Range		7	
	Skewness		-.590	.913
	Kurtosis		-.022	2.000
	F4	Mean		85.20
95% Confidence Interval for Mean		Lower Bound	80.69	
		Upper Bound	89.71	
5% Trimmed Mean			85.22	
Median			86.00	
Variance			13.200	
Std. Deviation			3.633	
Minimum			80	
Maximum			90	
Range			10	
Interquartile Range			6	
Skewness			-.267	.913
Kurtosis			1.074	2.000
F5		Mean		10.40
	95% Confidence Interval for Mean	Lower Bound	6.23	
		Upper Bound	14.57	
	5% Trimmed Mean		10.28	
	Median		8.00	
	Variance		11.300	
	Std. Deviation		3.362	
	Minimum		8	
	Maximum		15	

Range	7	
Interquartile Range	6	
Skewness	.806	.913
Kurtosis	-2.195	2.000



Kruskal-Wallis Test

Ranks

	Formula	N	Mean Rank
Disolusi	F1	5	18.10
	F2	5	15.00
	F3	5	8.70
	F4	5	20.20
	F5	5	3.00
	Total	25	

Test Statistics^{a,b}

	Disolusi
--	----------

Chi-Square	18.826
df	4
Asymp. Sig.	.001

a. Kruskal Wallis Test

b. Grouping Variable:

Formula

Mann-Whitney Test

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F1	5	6.60	33.00
	F2	5	4.40	22.00
Total		10		

	Disolusi
Mann-Whitney U	7.000
Wilcoxon W	22.000
Z	-1.201
Asymp. Sig. (2-tailed)	.230
Exact Sig. [2*(1-tailed Sig.)]	.310 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F1	5	7.70	38.50
	F3	5	3.30	16.50
Total		10		

	Disolusi

Mann-Whitney U	1.500
Wilcoxon W	16.500
Z	-2.312
Asymp. Sig. (2-tailed)	.021
Exact Sig. [2*(1-tailed Sig.)]	.016 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F1	5	4.80	24.00
	F4	5	6.20	31.00
	Total	10		

Test Statistics^a

	Disolusi
Mann-Whitney U	9.000
Wilcoxon W	24.000
Z	-.742
Asymp. Sig. (2-tailed)	.458
Exact Sig. [2*(1-tailed Sig.)]	.548 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F1	5	8.00	40.00
	F5	5	3.00	15.00
	Total	10		

Test Statistics^a

	Disolusi

Mann-Whitney U	.000
Wilcoxon W	15.000
Z	-2.652
Asymp. Sig. (2-tailed)	.008
Exact Sig. [2*(1-tailed Sig.)]	.008 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F2	5	7.70	38.50
	F3	5	3.30	16.50
	Total	10		

Test Statistics^a

	Disolusi
Mann-Whitney U	1.500
Wilcoxon W	16.500
Z	-2.378
Asymp. Sig. (2-tailed)	.017
Exact Sig. [2*(1-tailed Sig.)]	.016 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F2	5	3.90	19.50
	F4	5	7.10	35.50
	Total	10		

Test Statistics^a

	Disolusi

Mann-Whitney U	4.500
Wilcoxon W	19.500
Z	-1.753
Asymp. Sig. (2-tailed)	.080
Exact Sig. [2*(1-tailed Sig.)]	.095 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F2	5	8.00	40.00
	F5	5	3.00	15.00
	Total	10		

Test Statistics^a

	Disolusi
Mann-Whitney U	.000
Wilcoxon W	15.000
Z	-2.685
Asymp. Sig. (2-tailed)	.007
Exact Sig. [2*(1-tailed Sig.)]	.008 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F3	5	3.10	15.50
	F4	5	7.90	39.50
	Total	10		

Test Statistics^a

	Disolusi

Mann-Whitney U	.500
Wilcoxon W	15.500
Z	-2.522
Asymp. Sig. (2-tailed)	.012
Exact Sig. [2*(1-tailed Sig.)]	.008 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F3	5	8.00	40.00
	F5	5	3.00	15.00
	Total	10		

Test Statistics^a

	Disolusi
Mann-Whitney U	.000
Wilcoxon W	15.000
Z	-2.643
Asymp. Sig. (2-tailed)	.008
Exact Sig. [2*(1-tailed Sig.)]	.008 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

Ranks

	Formula	N	Mean Rank	Sum of Ranks
Disolusi	F4	5	8.00	40.00
	F5	5	3.00	15.00
	Total	10		

Test Statistics^a

	Disolusi

Mann-Whitney U	.000
Wilcoxon W	15.000
Z	-2.652
Asymp. Sig. (2-tailed)	.008
Exact Sig. [2*(1-tailed Sig.)]	.008 ^b

a. Grouping Variable: Formula

b. Not corrected for ties.

f. Uji Kadar Parasetamol dalam Tablet

Descriptives

	Formula		Statistic	Std. Error	
Uji_Kadar	F1	Mean	348.33	24.418	
		95% Confidence Interval for Mean	Lower Bound	285.56	
			Upper Bound	411.10	
		5% Trimmed Mean		347.31	
		Median		328.50	
		Variance		3577.467	
		Std. Deviation		59.812	
		Minimum		281	
		Maximum		434	
		Range		153	
		Interquartile Range		113	
		Skewness		.659	.845
		Kurtosis		-1.291	1.741
			F2	Mean	445.50
95% Confidence Interval for Mean	Lower Bound			365.46	
	Upper Bound			525.54	
5% Trimmed Mean				447.11	
Median				451.50	
Variance				5817.500	
Std. Deviation				76.273	
Minimum				327	
Maximum				535	
Range				208	

	Interquartile Range	132	
	Skewness	-.528	.845
	Kurtosis	-.447	1.741
F3	Mean	519.50	40.166
	95% Confidence Interval for Mean	Lower Bound 416.25 Upper Bound 622.75	
	5% Trimmed Mean	522.61	
	Median	543.00	
	Variance	9679.900	
	Std. Deviation	98.386	
	Minimum	366	
	Maximum	617	
	Range	251	
	Interquartile Range	172	
	Skewness	-.715	.845
	Kurtosis	-.855	1.741
F4	Mean	450.67	16.518
	95% Confidence Interval for Mean	Lower Bound 408.21 Upper Bound 493.13	
	5% Trimmed Mean	449.35	
	Median	442.00	
	Variance	1637.067	
	Std. Deviation	40.461	
	Minimum	406	
	Maximum	519	
	Range	113	
	Interquartile Range	67	
	Skewness	.974	.845
	Kurtosis	.735	1.741
F5	Mean	493.17	20.408
	95% Confidence Interval for Mean	Lower Bound 440.71 Upper Bound 545.63	
	5% Trimmed Mean	491.02	
	Median	482.50	
	Variance	2498.967	

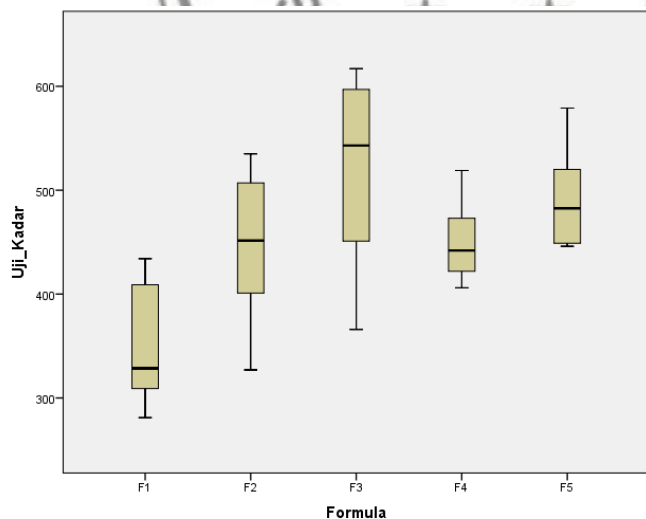
Std. Deviation	49.990	
Minimum	446	
Maximum	579	
Range	133	
Interquartile Range	87	
Skewness	1.100	.845
Kurtosis	.877	1.741

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji_Kadar	F1	.293	6	.116	.895	6	.346
	F2	.155	6	.200*	.968	6	.880
	F3	.247	6	.200*	.909	6	.432
	F4	.203	6	.200*	.943	6	.683
	F5	.239	6	.200*	.894	6	.342

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

a. Lilliefors Significance Correction



Descriptives

Uji_Kadar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					F1	6		
F2	6	445.50	76.273	31.138	365.46	525.54	327	535
F3	6	519.50	98.386	40.166	416.25	622.75	366	617
F4	6	450.67	40.461	16.518	408.21	493.13	406	519
F5	6	493.17	49.990	20.408	440.71	545.63	446	579
Total	30	451.43	86.761	15.840	419.04	483.83	281	617

Test of Homogeneity of Variances

Uji_Kadar

Levene Statistic	df1	df2	Sig.
2.138	4	25	.106

ANOVA

Uji_Kadar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	102240.867	4	25560.217	5.506	.003
Within Groups	116054.500	25	4642.180		
Total	218295.367	29			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Uji_Kadar

Games-Howell

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	-97.167	39.571	.181	-228.83	34.50
	F3	-171.167 [*]	47.006	.037	-332.36	-9.98
	F4	-102.333 [*]	29.480	.044	-201.99	-2.68
	F5	-144.833 [*]	31.824	.008	-250.21	-39.46
F2	F1	97.167	39.571	.181	-34.50	228.83

	F3	-74.000	50.822	.610	-243.28	95.28
	F4	-5.167	35.248	1.000	-128.49	118.15
	F5	-47.667	37.230	.709	-174.03	78.70
F3	F1	171.167 [*]	47.006	.037	9.98	332.36
	F2	74.000	50.822	.610	-95.28	243.28
	F4	68.833	43.430	.550	-88.93	226.59
	F5	26.333	45.053	.973	-132.32	184.99
F4	F1	102.333 [*]	29.480	.044	2.68	201.99
	F2	5.167	35.248	1.000	-118.15	128.49
	F3	-68.833	43.430	.550	-226.59	88.93
	F5	-42.500	26.255	.520	-129.64	44.64
F5	F1	144.833 [*]	31.824	.008	39.46	250.21
	F2	47.667	37.230	.709	-78.70	174.03
	F3	-26.333	45.053	.973	-184.99	132.32
	F4	42.500	26.255	.520	-44.64	129.64

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



Lampiran 9. Contoh Perhitungan

Perhitungan pembuatan dapar fosfat pH 5,8 (Depkes RI, 1995)

Dibuat dengan mencampur 50,0 ml kalium dihidrogenfosfat 0,2 M dengan sejumlah natrium hidroksida 0,2 N sebanyak 3,6 ml dengan air bebas CO₂ P secukupnya hingga 200,0 ml.

Perhitungan dapar fosfat dalam sekali pembuatan sebanyak 1 liter, maka KH₂PO₄ 0,2 M dan NaOH 0,2 N yang dibutuhkan sebanyak:

- Perhitungan KH₂PO₄ 0,2 M, 250 ml

$$M = \frac{\text{gram}}{\text{Mr}} \times \frac{1000}{P} \times V$$

$$0,2 = \frac{x}{136,08} \times \frac{1000}{250} \times 1$$

$$27,216 = 4x$$

$$x = 6,804 \text{ gram ad 250 ml aquadest}$$

(diambil 250 ml)

- Perhitungan NaOH 0,2 N, 100 ml

$$N = \frac{\text{gram}}{\text{Mr}} \times \frac{1000}{P} \times V$$

$$0,2 = \frac{x}{40} \times \frac{1000}{100} \times 1$$

$$8 = 10x$$

$$x = 0,8 \text{ gram ad 100 ml aquadest}$$

(diambil 18 ml)

- Cara membuat larutan dapar fosfat pH 5,8

250 ml KH₂PO₄ 0,2 M + 18 ml NaOH 0,2 N kemudian ad dengan aquadest sampai tanda sebanyak 1000 ml, kemudian cek pH larutan. Jika pH larutan lebih tinggi dari pH yang ditetapkan maka ditambahkan sedikit demi sedikit larutan HCl 0,1 N, jika sebaliknya maka ditambahkan sedikit demi sedikit larutan NaOH 0,2 N hingga mencapai pH yang diinginkan.

Perhitungan Hasil Uji Disolusi

Formula 1

Replikasi I

$$Y = 0,0601X + 0,1119$$

$$0,692 = 0,0601X + 0,1119$$

$$0,0601 X = 0,692 - 0,1119$$

$$0,0601 X = 0,5801$$

$$X = 0,5801 : 0,0601$$

$$= 9,652 \mu\text{g/ml} \times \text{faktor pengenceran}$$

$$= 9,652 \mu\text{g/ml} \times 50$$

$$= 482,6123 \mu\text{g/ml} \times \text{volume disolusi}$$

$$= 482,6123 \mu\text{g/ml} \times 900 \text{ ml}$$

$$= 434.351,0815 \mu\text{g}$$

$$= 434,351 \text{ mg}$$

% kadar Parasetamol terlarut :

$$\% \text{ kadar terlarut} = \frac{\text{kadar terlarut}}{\text{kadar pct tiap tablet}} \times 100\%$$

$$= \frac{434,35 \text{ mg}}{500 \text{ mg}} \times 100\%$$

$$= 86,87\%$$

$$= 87\%$$

Contoh perhitungan uji kadar tablet parasetamol

F I

$$A=0,1119 \quad B=0,0601 \quad r=0,9985$$

$$VP \text{ (volume pelarut)} = 200 \text{ ml}$$

$$FP \text{ (factor pengenceran)} = 500x$$

1. Abs : 0,309

Rumus : Y = BX + A

$$0,309 = 0,0601 X + 0,1119$$

$$X = (0,309 - 0,1119) / 0,0601$$

$$= 3,28 \mu\text{g/ml} / 1000$$

$$= 0,00328 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,656 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 328 \text{ mg}$$

2. Abs : 0,298

Rumus : Y = BX + A

$$0,309 = 0,0601 X + 0,1119$$

$$X = (0,298 - 0,1119) / 0,0601$$

$$= 3,096 \mu\text{g/ml} / 1000$$

$$= 0,0031 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,619 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 309 \text{ mg}$$

3. Abs : 0,281

Rumus : Y = BX + A

$$0,281 = 0,0601 X + 0,1119$$

$$X = (0,281 - 0,1119) / 0,0601$$

$$= 2,81 \mu\text{g/ml} / 1000$$

$$= 0,0028 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,56 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 281 \text{ mg}$$

4. Abs : 0,310

Rumus : Y = BX + A

$$0,310 = 0,0601 X + 0,1119$$

$$X = (0,310 - 0,1119) / 0,0601$$

$$= 3,29 \mu\text{g/ml} / 1000$$

$$= 0,0033 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,66 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 329 \text{ mg}$$

5. Abs : 0,358

Rumus : Y = BX + A

$$0,358 = 0,0601 X + 0,1119$$

$$X = (0,358 - 0,1119) / 0,0601$$

$$= 4,095 \mu\text{g/ml} / 1000$$

$$= 0,0041 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,82 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 409 \text{ mg}$$

6. Abs : 0,373

Rumus : Y = BX + A

$$0,373 = 0,0601 X + 0,1119$$

$$X = (0,373 - 0,1119) / 0,0601$$

$$= 4,34 \mu\text{g/ml} / 1000$$

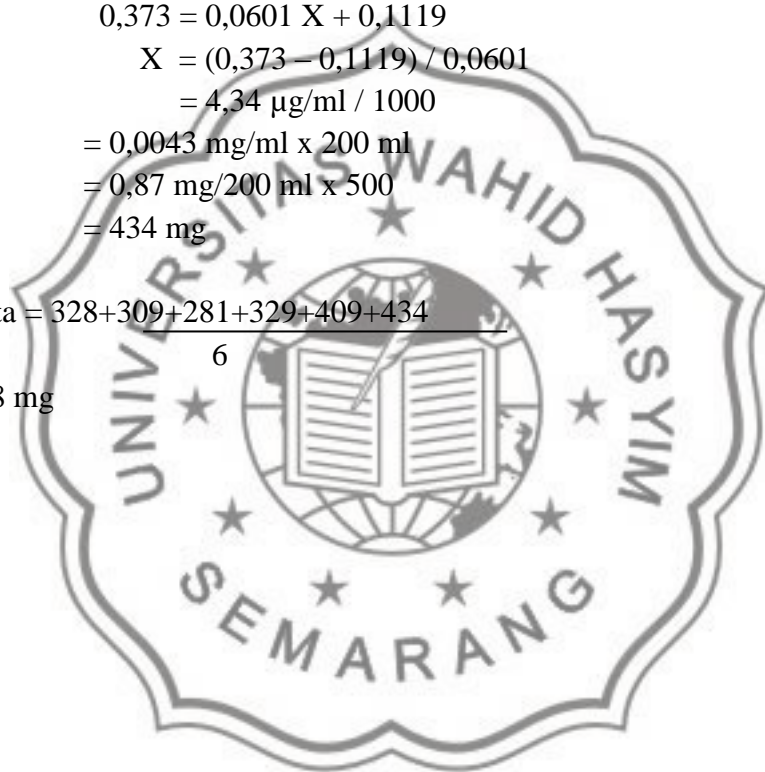
$$= 0,0043 \text{ mg/ml} \times 200 \text{ ml}$$

$$= 0,87 \text{ mg} / 200 \text{ ml} \times 500$$

$$= 434 \text{ mg}$$

$$\text{Rata-rata} = \frac{328+309+281+329+409+434}{6}$$

$$= 348 \text{ mg}$$



Lampiran 10. Gambar Bahan Penelitian



Umbo Porang



Simplisia Porang



Tepung Porang



Lampiran 11. Gambar Alat Uji Sifat Alir Granul



Granulator



Granul Flow Tester



Volumenometer

Lampiran 11. Gambar Alat Uji Sifat Fisik dan Pelepasan Tablet



Hardness Tester



Friabilator



Desintegration Tester



Disolution Tester



Timbangan Elektrik

