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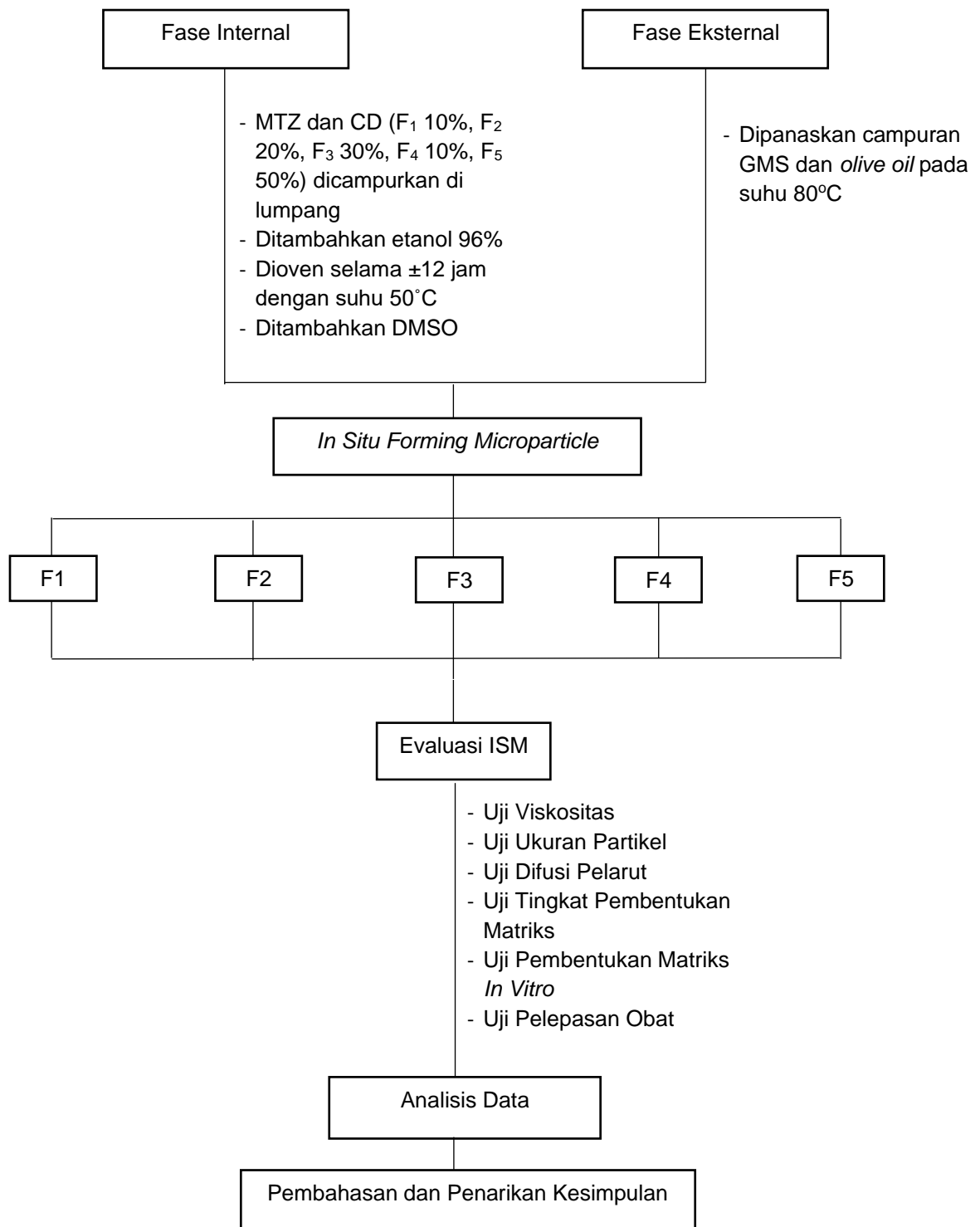
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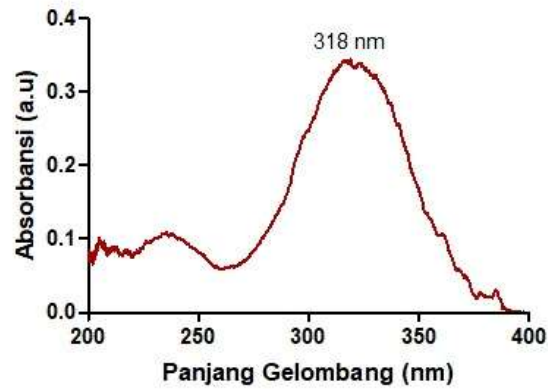
LAMPIRAN

Lampiran 1. Skema Kerja Penelitian



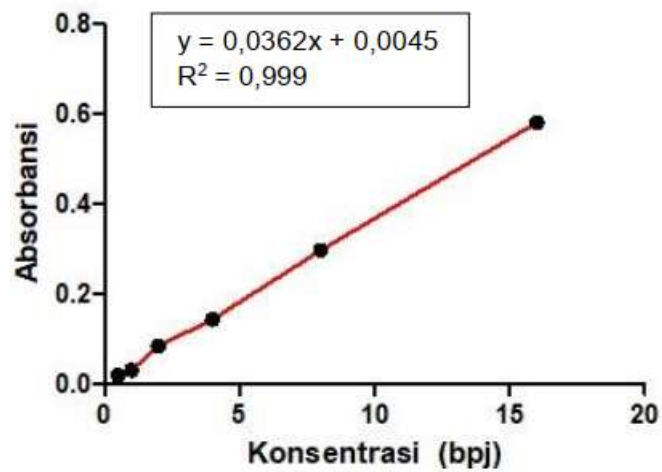
Lampiran 2. Panjang Gelombang Maksimum dan Kurva Baku

Lampiran 2.1 Panjang Gelombang Maksimum MTZ



Gambar 10. Panjang gelombang MTZ dalam metanol + PBS

Lampiran 2.2 Kurva Baku MTZ dalam Metanol



Gambar 11. Kurva baku MTZ dalam methanol

Lampiran 3. Perhitungan

Lampiran 3.1 Perhitungan Formula

Jika setiap formula dibuat masing-masing sebanyak 4 g, maka jumlah bahan untuk tiap formula, yaitu:

Formulasi 1

$$\text{MTZ} = 2,5\% \times 4\text{g} = 100 \text{ mg}$$

$$\beta\text{-CD} = 5\% \times 4 \text{ g} = 200 \text{ mg}$$

$$\text{DMSO} = 42,5\% \times 4 \text{ g} = 1700 \text{ mg}$$

$$\text{GMS} = 12,5\% \times 4 \text{ g} = 500 \text{ mg}$$

$$\text{Minyak Zaitun} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

Formulasi 2

$$\text{MTZ} = 2,5\% \times 4\text{g} = 100 \text{ mg}$$

$$\beta\text{-CD} = 10\% \times 4 \text{ g} = 400 \text{ mg}$$

$$\text{DMSO} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

$$\text{GMS} = 12,5\% \times 4 \text{ g} = 500 \text{ mg}$$

$$\text{Minyak Zaitun} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

Formulasi 3

$$\text{MTZ} = 2,5\% \times 4\text{g} = 100 \text{ mg}$$

$$\beta\text{-CD} = 15\% \times 4 \text{ g} = 600 \text{ mg}$$

$$\text{DMSO} = 32,5\% \times 4 \text{ g} = 1300 \text{ mg}$$

$$\text{GMS} = 12,5\% \times 4 \text{ g} = 500 \text{ mg}$$

$$\text{Minyak Zaitun} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

Formulasi 4

$$\text{MTZ} = 2,5\% \times 4\text{g} = 100 \text{ mg}$$

$$\beta\text{-CD} = 20\% \times 4 \text{ g} = 800 \text{ mg}$$

$$\text{DMSO} = 27,5\% \times 4 \text{ g} = 1100 \text{ mg}$$

$$\text{GMS} = 12,5\% \times 4 \text{ g} = 500 \text{ mg}$$

$$\text{Minyak Zaitun} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

Formulasi 5

$$\text{MTZ} = 2,5\% \times 4\text{g} = 100 \text{ mg}$$

$$\beta\text{-CD} = 25\% \times 4 \text{ g} = 1000 \text{ mg}$$

$$\text{DMSO} = 22,5\% \times 4 \text{ g} = 900 \text{ mg}$$

$$\text{GMS} = 12,5\% \times 4 \text{ g} = 500 \text{ mg}$$

$$\text{Minyak Zaitun} = 37,5\% \times 4 \text{ g} = 1500 \text{ mg}$$

Lampiran 3.2 Uji pelepasan obat

$$\text{Persamaan : } y = 0,0362x + 0,0045$$

Keterangan :

x = konsentrasi

y = absorbansi

Untuk F1 jam ke-1 replikasi pertama diperoleh absorbansi 0,112 dengan persamaan regresi $y = 0,0362x + 0,0045$ dan faktor dilusi = 16

$$x = (0,112 - 0,0045) / 0,0362$$

$$x = (0,1075) / 0,0386$$

$$x = 2,784 \text{ } \mu\text{g/mL}$$

$$\text{Konsentrasi dalam 100 mL} = 2,784 \text{ } \mu\text{g/mL} \times 100 \text{ mL} \times 16 = 4455,95 \text{ } \mu\text{g} = 4,455 \text{ mg}$$

$$\text{Faktor koreksi} = \frac{\text{Konsentrasi jam sebelumnya}}{1000} + \text{faktor koreksi jam sebelumnya}$$

$$\text{Faktor koreksi} = \frac{4.455}{1000} + 0.005 = 0,00945$$

$$\begin{aligned} \text{Jumlah obat yang terdisolusi} &= \text{konsentrasi dalam 100 mL} + \text{Faktor koreksi} \\ &= 4,455 + 0,00945 \\ &= 4,464 \text{ mg} \end{aligned}$$

Lampiran 3.3 Perhitungan fluks

Untuk F1 jam ke-168 replikasi pertama, konsentrasi obat adalah 10,028 µg/mL, faktor dilusi = 16, volume kompartemen = 100 mL, dan luas membran difusi adalah 7,5 (p x l = 3 x 2,5 cm)

$$\text{Permeat} = \frac{\text{Konsentrasi obat pada jam ke-n} \times \text{faktor dilusi} \times \text{volume kompartemen reseptor}}{\text{Luas area membran difusi}}$$

$$\text{Pelepasan} = \frac{10,028 \frac{\mu\text{g}}{\text{mL}} \times 16 \times 100 \text{ mL}}{7,5 \text{ cm}^2}$$

$$\text{Pelepasan} = 2139,3 \mu\text{g}/\text{cm}^2$$

Untuk permeat kumulatif, dilakukan penjumlahan dari pelepasan dari jam-jam sebelumnya sehingga diperoleh nilai pelepasan kumulatif pada jam ke-168 replikasi pertama = 32073,5 µg/cm²

$$\text{Fluks} = \frac{\text{Pelepasan kumulatif pada jam ke-n}}{\text{waktu (jam)}}$$

$$\text{Fluks} = \frac{32073,5 \mu\text{g}/\text{cm}^2}{168 \text{ jam}}$$

$$\text{Fluks} = 190,91 \mu\text{g}/\text{cm}^2 \cdot \text{jam}$$

Lampiran 4. Tabel Hasil Evaluasi

Lampiran 4.1 Tabel kurva baku MTZ dalam Metanol + PBS pH 6,8

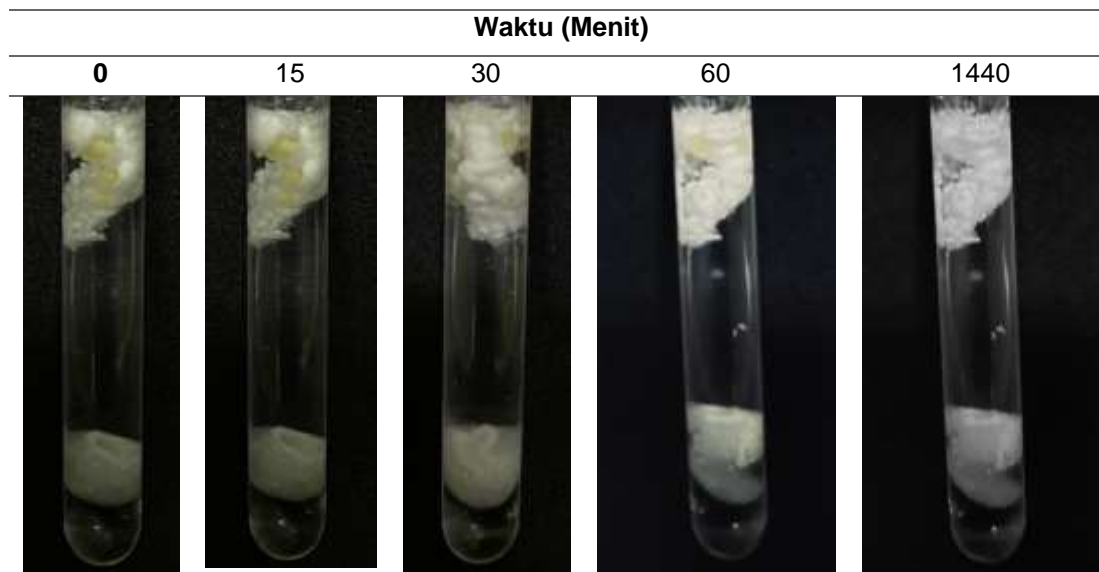
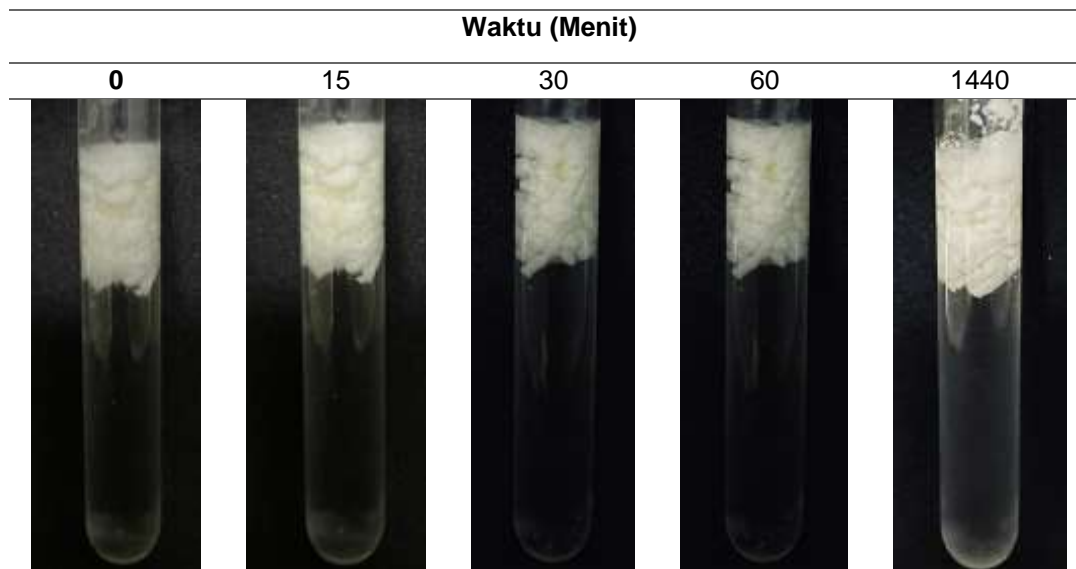
Tabel 4. Kurva baku MTZ dalam Metanol + PBS pH 6,8

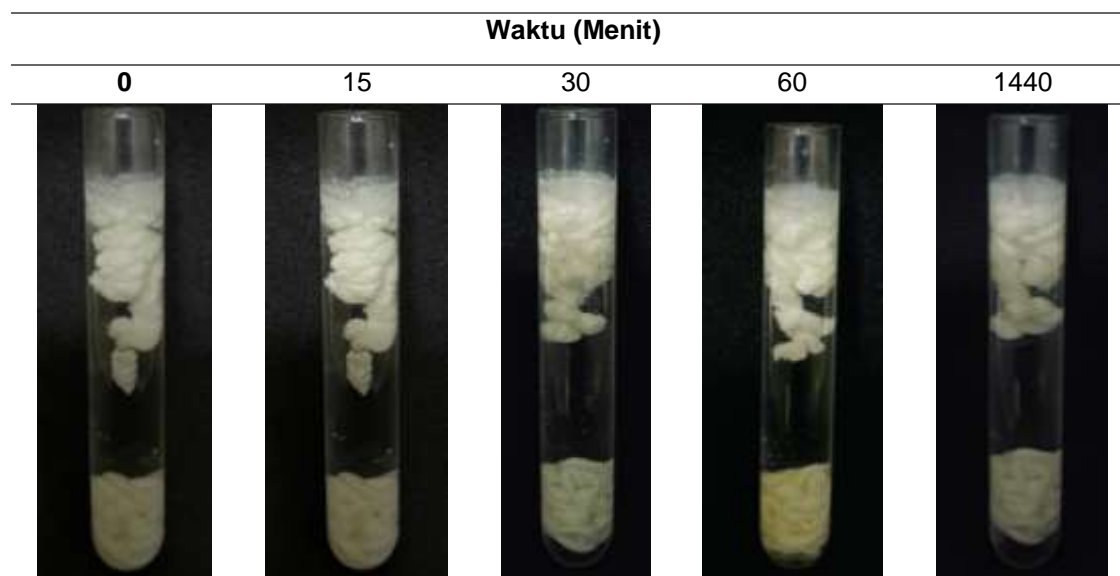
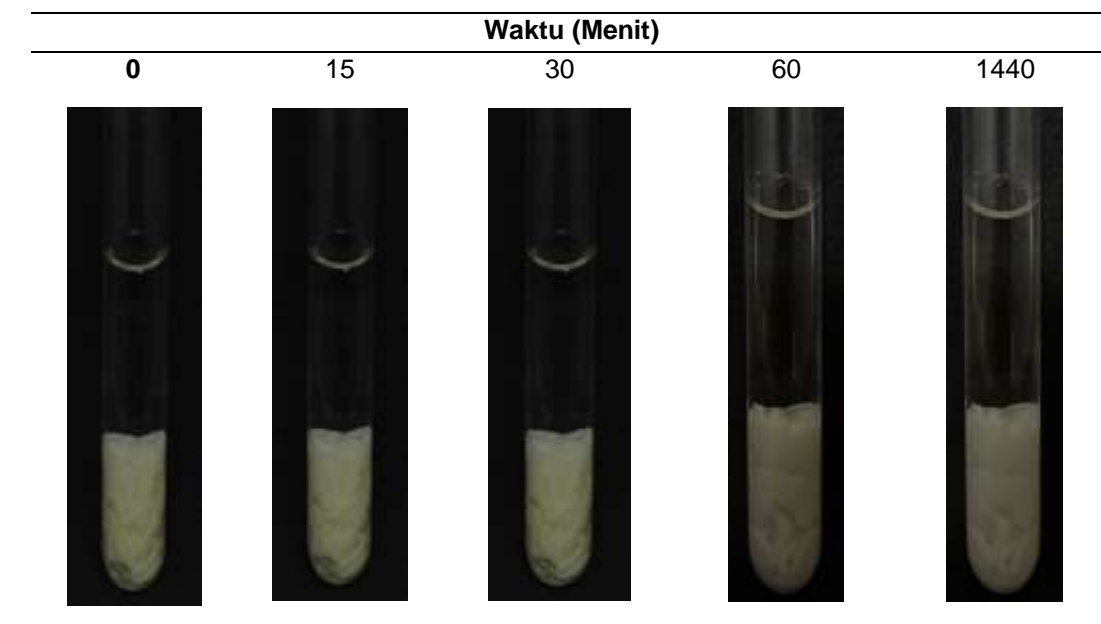
Konsentrasi	Serapan			Rata-rata± SD
	Replikasi 1	Replikasi 2	Replikasi 3	
0	0	0	0	0
0,5	0,02	0,00	0,005	0,01±0,01
1	0,04	0,03	0,03	0,02±0,028
2	0,08	0,07	0,07	0,07±0,07
4	0,17	0,14	0,14	0,14±0,14
8	0,35	0,30	0,30	0,31±0,31
16	0,66	0,58	0,58	0,60±0,60

Lampiran 4.2 Tabel Uji Viskositas






Tabel 5. Data hasil uji viskositas

Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata± SD
F1	240	280	200	240±31,10
F2	2320	2400	1960	2226,67±234,37
F3	5000	6000	5600	5533,33±503,32
F4	15200	13600	18400	15733,3±2444,04
F5	24000	28000	29600	27200±2884,44

Lampiran 4.3 Tabel Uji Pembentukan Matriks *In Vitro* dari ISM**Lampiran 4.3.1 Tabel Uji pembentukan matriks *In Vitro* formulasi 1 (β -CD 10%)****Tabel 6. Hasil uji pembentukan matriks *In Vitro* formulasi 1 (β -CD 10%)****Lampiran 4.3.2 Uji pembentukan matriks *In Vitro* formulasi 2 (β -CD 20%)****Tabel 7. Hasil uji pembentukan matriks *In Vitro* formulasi 2 (β -CD 20%)**

Lampiran 4.3.3 Uji pembentukan matriks *In Vitro* formulasi 3 (β -CD 30%)**Tabel 8. Hasil uji pembentukan matriks *In Vitro* formulasi 3 (β -CD 30%)****Lampiran 4.3.4 Uji pembentukan matriks formulasi 4 (β -CD 40%)****Tabel 9. Hasil uji pembentukan matriks *In Vitro* formulasi 4 (β -CD 40%)**

Lampiran 4.3.5 Uji pembentukan matriks *In Vitro* formulasi 5 (β -CD 50%)**Tabel 10. Hasil uji pembentukan matriks *In Vitro* formulasi 5 (β -CD 50%)**

Waktu (Menit)				
0	15	30	60	1440
				

Lampiran 4.4 Tabel Studi Ukuran Mikropartikel

Lampiran 4.4.1 Tabel Studi Ukuran Mikropartikel Formula 1

Tabel 11. Hasil uji studi ukuran mikropartikel formula 1 (β -CD 10%)

Sebelum PBS	Rata- Rata \pm SD	Setelah PBS (menit)					
		0		15		30	
		Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD
291,32	134,24 \pm 34,43	114,71	127,59 \pm 23,33	121,57	100,69 \pm 26,26	95,41	83,18 \pm 16,66
159,61		193,34		133,47		106,38	
278,55		118,12		127,08		79,78	
114,75		133,75		106,24		65,73	
119,63		106,03		111,92		65,35	
162,74		131,16		112,59		83,37	
149,23		100,19		111,29		88,59	
134,01		124,71		103,18		86,60	
118,77		150,39		78,69		90,72	
88,42		109,07		106,68		91,14	
214,22		194,50		118,12		106,47	
149,95		133,43		146,69		100,33	
113,77		94,66		105,41		69,12	
129,61		125,28		109,07		75,92	
96,30		115,37		101,52		108,46	
159,48		98,24		125,92		38,41	
139,49		98,41		97,07		74,84	

133,19	105,81	89,72	94,58
156,39	96,46	83,59	83,98
140,19	94,66	94,06	86,43
132,57	89,97	82,69	98,71
128,65	79,78	94,06	65,72
124,18	98,63	94,18	79,11
118,12	127,69	115,24	77,84
108,65	113,02	103,24	101,52
120,05	101,61	96,28	66,48
150,80	121,57	117,38	82,23
135,13	105,76	108,65	62,23
149,02	103,65	87,64	84,88
137,32	91,92	107,19	67,42
159,34	118,13	124,35	87,87
150,55	166,97	89,17	80,61
152,51	108,62	100,19	87,55
186,39	117,38	125,41	87,28
129,19	81,37	80,62	66,82
199,74	132,06	116,34	86,85
130,31	148,90	105,83	132,52
121,58	97,25	73,00	130,54
160,61	78,83	114,43	68,43
142,84	113,68	106,32	80,37

107,17	117,74	95,34	60,36
146,02	91,63	129,83	83,00
110,39	120,93	89,36	62,96
154,31	91,15	132,95	76,95
147,98	82,42	113,88	79,78
154,01	97,76	88,49	68,29
100,23	136,04	96,94	107,74
105,81	98,41	107,74	53,19
95,88	97,99	116,26	58,33
109,43	160,05	106,24	79,59
151,04	103,25	122,78	63,05
123,74	102,31	123,42	87,55
116,66	97,72	98,24	72,37
105,66	99,56	113,46	125,20
137,21	96,18	106,75	94,38
107,98	97,23	84,44	86,60
131,23	135,60	82,22	95,57
114,43	109,39	119,33	101,67
166,32	113,01	67,20	79,81
115,82	126,06	107,63	83,00
131,16	96,46	90,13	71,89
113,67	97,93	104,80	80,37
108,66	143,21	105,57	74,45

148,61	99,71	86,58	93,87
131,02	136,64	117,32	95,34
114,71	96,58	102,06	55,99
157,45	69,13	156,42	61,21
126,35	99,71	70,87	95,34
153,51	94,58	65,55	63,85
176,14	108,24	128,52	105,98
147,40	68,40	71,60	77,34
180,27	105,98	111,16	77,15
114,96	131,16	180,04	57,00
97,14	96,28	62,59	81,70
185,62	78,59	114,75	90,97
119,59	103,40	107,69	77,48
144,44	110,96	90,22	61,40
114,58	113,28	103,71	90,13
79,40	105,29	168,76	83,25
158,22	88,41	146,53	80,52
142,85	123,44	232,08	89,34
116,66	105,75	115,76	76,95
131,53	75,22	153,11	80,24
92,89	97,25	143,49	89,54
155,82	92,75	146,64	64,05
128,65	68,43	132,40	102,65

103,25	100,65	96,60	70,64
81,37	66,16	111,72	85,90
89,56	105,75	119,38	89,20
99,33	65,35	93,70	80,37
85,89	89,56	98,40	69,35
117,37	117,45	130,70	59,37
186,84	105,29	113,75	88,59
92,95	91,65	190,78	119,38
100,19	76,66	66,74	95,03
152,07	101,44	105,11	95,41
95,22	126,61	113,02	108,65
117,34	108,59	76,36	87,38
136,60	84,23	108,46	83,18
105,86	103,40	107,18	102,06

Lampiran 4.4.2 Tabel Studi Ukuran Mikropartikel Formula 2

Tabel 12. Hasil uji studi ukuran mikropartikel formula 2 (β -CD 20%)

Sebelum PBS	Rata- Rata \pm SD	Setelah PBS (menit)					
		0		15		30	
		Diameter	Rata- Rata \pm SD	Diameter	Rata-Rata \pm SD	Diameter	Rata- Rata \pm SD
133,55	140,20 \pm 31,00	160,52	132,71 \pm 36,70	105,75	103,94 \pm 27,49	124,56	92,06 \pm 32,64
170,20		117,37		111,84		102,07	
110,96		112,83		122,07		95,99	
107,68		109,02		172,19		81,87	

89,34	103,18	130,43	80,26
67,28	78,42	135,81	66,59
89,97	96,28	67,42	65,00
116,26	76,48	97,99	59,11
129,41	82,86	86,22	56,70
104,93	66,42	58,78	50,08
149,54	107,81	78,52	114,23
117,13	130,47	116,27	47,52
126,86	89,62	115,54	144,00
161,04	133,96	194,28	100,55
142,95	102,86	106,84	87,05
136,81	159,12	76,27	76,74
126,79	102,43	109,65	89,22
123,17	90,22	110,69	62,39
94,02	101,27	143,49	87,31
121,62	96,82	139,05	61,74
110,20	121,57	93,46	49,90
122,44	133,47	164,49	103,00
159,43	127,08	131,40	74,84
165,95	106,24	116,30	47,99
163,70	111,92	148,64	212,54
111,10	112,59	105,57	195,25
135,04	111,29	129,52	82,42
200,25	103,18	102,36	99,93
89,72	78,69	173,06	105,81
84,89	106,68	135,61	103,24
137,38	197,52	90,58	111,97
109,31	149,06	130,17	107,53

148,51	151,51	112,96	111,17
110,96	97,23	134,51	78,14
113,28	94,37	153,27	71,73
120,42	99,71	144,64	82,99
117,72	106,68	169,27	108,17
138,16	110,08	147,83	94,58
164,46	106,47	94,06	51,32
110,39	136,15	100,65	33,24
131,10	352,04	120,92	60,61
121,55	182,84	125,28	131,16
117,00	127,47	91,54	96,46
91,92	219,87	104,29	100,23
108,96	151,02	103,65	173,00
117,20	158,95	100,78	120,67
141,59	77,87	141,03	97,07
133,08	108,17	130,43	98,24
72,58	108,17	118,94	82,42
139,20	178,03	139,92	99,34
145,92	150,43	116,96	138,28
187,78	109,38	103,93	80,18
131,23	125,03	118,50	188,88
175,10	83,98	112,29	83,98
136,31	85,89	103,93	67,76
173,31	68,68	98,64	54,22
142,47	84,10	124,35	76,06
116,67	82,21	90,03	77,84
111,85	112,59	132,76	67,33
145,18	71,17	117,59	66,59

107,38	62,96	133,78	81,01
135,14	88,22	120,92	66,39
135,12	76,06	97,07	62,96
122,49	76,16	119,03	85,51
123,42	105,74	89,97	105,08
123,73	55,06	117,32	97,93
137,77	69,43	108,16	90,95
86,58	58,59	168,26	99,33
101,39	67,79	101,67	94,36
121,63	59,85	100,16	74,32
159,16	95,34	164,57	85,85
176,80	44,67	131,93	92,14
192,56	58,82	125,54	76,25
135,31	81,65	116,61	84,23
174,72	66,50	116,15	87,88
188,12	77,02	113,02	106,32
148,65	70,87	125,93	87,31
141,56	82,42	152,99	70,85
239,27	85,18	86,83	77,02
146,05	61,83	105,29	72,13
203,76	71,17	162,78	109,64
186,64	91,65	174,30	106,46
161,07	67,88	102,07	87,87
96,18	96,60	98,81	74,32
131,12	95,88	73,60	103,90
123,20	73,70	89,95	67,88
134,46	70,49	76,27	174,10
153,35	84,09	81,87	112,81

171,90	92,65	93,84	105,66
114,00	89,97	77,05	126,43
134,70	172,26	119,34	96,60
184,50	71,09	104,58	122,44
181,09	101,46	124,27	69,10
175,28	89,95	133,88	86,56
162,30	107,61	101,42	132,06
160,76	54,08	152,17	95,22
123,25	73,60	129,45	82,23
153,08	118,77	161,06	94,60
120,48	96,28	138,37	111,72
108,46	65,35	131,69	97,07
116,43	70,53	117,13	124,56
176,45	110,69	129,23	102,07
157,63	86,12	114,71	95,99
165,74	122,79	97,07	81,87
154,69	135,04	70,85	80,26
162,66	97,09	121,48	66,59
130,47	120,17	91,91	65,00
143,53	95,34	100,53	59,11
159,01	93,89	99,56	56,70
154,22	109,93	83,69	50,08
164,67	105,02	88,52	114,23
139,93	105,74	56,83	47,52
134,90	100,78	92,65	144,00
137,05	89,19	68,65	100,55
152,12	139,92	82,96	87,05
182,28	103,78	95,57	76,74

127,37	70,85	92,75	89,22
178,78	128,09	113,02	62,39
210,21	79,87	89,70	87,31
178,51	110,20	112,79	61,74
191,10	95,99	105,22	49,90
133,08	76,48	65,08	103,00
112,20	81,32	121,57	74,84
149,55	91,21	102,31	47,99
152,15	89,56	113,92	212,54
162,75	82,21	161,82	195,25
147,83	87,81	138,71	82,42
128,64	71,95	118,18	99,93
193,57	101,39	139,65	105,81
234,39	77,02	112,82	103,24
213,37	104,93	92,23	111,97
112,20	150,26	79,40	107,53
79,78	91,91	61,39	111,17
203,46	104,80	82,98	78,14
146,11	145,70	97,99	71,73
58,59	83,98	101,02	82,99
112,82	115,69	126,79	108,17
97,62	109,57	90,97	94,58
130,47	113,02	148,21	51,32
138,45	98,41	62,23	33,24
130,09	95,41	71,95	60,61
194,83	116,96	53,94	131,16
132,22	113,67	82,98	96,46
143,42	123,66	110,39	100,23

104,23	89,70	86,56	173,00
168,88	195,41	94,39	120,67
134,69	146,84	104,12	97,07
110,69	92,22	176,81	98,24
191,01	155,07	102,07	82,42
149,22	68,43	105,66	99,34

Lampiran 4.4.3 Tabel Studi Ukuran Mikropartikel Formula 3

Tabel 13. Hasil uji studi ukuran mikropartikel formula 3 (β -CD 30%)

Sebelum PBS	Rata- Rata \pm SD	Setelah PBS (menit)					
		0		15		30	
		Diameter	Rata-Rata \pm SD	Diameter	Rata- Rata \pm SD	Diameter	Rata-Rata \pm SD
217,05	157,22 \pm 44,65	107,81	143,26 \pm 38,01	99,71	126,48 \pm 23,49	56,84	115,26 \pm 38,01
149,22		130,47		125,28		74,71	
108,59		89,62		133,78		80,24	
125,82		133,96		136,17		81,68	
124,27		102,86		115,01		89,26	
115,47		159,12		98,95		101,44	
94,58		102,43		134,90		104,12	
146,57		90,22		121,99		105,98	
163,73		101,27		102,51		107,96	
124,95		96,82		119,70		111,97	
85,90		132,87		179,46		108,16	
113,51		140,91		113,90		135,81	
102,31		134,67		133,25		139,61	
128,89		114,43		103,40		111,33	

182,30	141,17	137,76	120,05
164,24	191,72	89,19	124,35
187,94	95,89	112,79	92,75
170,36	87,99	77,87	91,30
164,54	99,12	121,80	91,64
165,04	129,12	111,59	81,49
150,86	95,34	111,92	71,89
132,06	100,33	89,36	86,13
83,00	81,87	125,27	75,12
142,85	111,92	69,95	75,52
119,12	94,35	99,88	63,66
129,98	119,84	88,33	103,05
135,41	122,78	100,19	99,71
147,10	151,35	101,74	75,12
146,11	122,46	95,32	58,03
180,73	98,19	79,81	79,40
217,02	142,62	100,78	96,60
100,78	119,66	86,56	75,12
162,29	146,24	120,93	80,52
269,39	101,02	111,29	88,53
229,68	91,81	94,18	54,46
128,62	122,56	90,23	60,23
183,51	100,93	70,01	91,97
222,64	90,58	149,42	92,63
197,24	105,86	82,42	56,40
97,25	151,31	97,09	77,62
253,45	100,78	96,94	79,40
166,49	115,69	87,64	70,50

179,40	161,06	90,13	86,12
140,47	89,54	158,35	87,88
227,55	111,46	144,27	97,40
190,44	119,03	94,45	98,41
251,02	82,99	127,23	98,25
277,61	104,93	89,19	106,84
171,35	85,90	122,36	74,19
161,42	112,68	83,59	74,45
202,81	89,34	87,38	67,76
157,21	109,65	118,94	62,11
279,35	114,01	113,51	55,34
156,08	90,03	97,95	50,11
117,92	105,99	106,38	89,54
152,13	109,57	98,95	50,46
111,92	85,89	103,63	81,70
171,92	85,96	114,57	49,04
224,55	104,29	174,11	57,00
126,44	153,31	87,55	79,61
126,43	97,25	79,59	60,90
86,60	71,09	105,02	84,23
154,52	164,98	118,62	58,33
149,91	109,65	121,62	65,55
106,41	110,19	80,62	51,18
144,68	90,13	81,49	65,55
154,69	74,45	226,55	68,10
93,56	83,96	82,21	92,70
174,81	101,61	123,30	121,80
190,14	91,91	132,04	87,88

165,27	94,18	132,52	76,95
125,41	95,32	120,05	78,69
155,24	84,43	182,29	67,28
181,15	63,92	73,05	56,84
135,80	126,01	141,97	95,41
150,71	105,98	103,24	104,13
119,20	76,25	129,12	106,90
196,11	86,78	132,91	89,17
197,24	86,85	67,20	163,03
94,60	108,24	158,67	117,72
106,68	79,59	149,95	86,83
135,81	103,48	161,08	91,42
203,54	93,38	72,38	63,84
169,20	95,22	108,41	80,61
121,55	90,07	58,33	66,16
187,07	116,17	153,78	90,97
199,27	92,95	109,02	72,74
150,48	109,65	117,13	75,24
278,74	98,92	84,64	136,15
172,46	85,36	117,72	83,69
136,50	90,89	78,82	94,58
173,40	80,37	122,36	63,45
175,75	163,00	89,56	102,46
130,00	88,35	96,28	74,66
146,11	86,31	67,42	87,45
132,08	95,14	278,16	99,71
106,41	95,14	228,18	96,94
109,11	102,65	266,58	87,20

126,86	97,31	98,95	105,81
128,09	75,45	143,91	87,64

Lampiran 4.4.4 Tabel Studi Ukuran Mikropartikel Formula 4

Tabel 14. Hasil uji studi ukuran mikropartikel formula 4 (β -CD 40%)

Sebelum PBS	Rata- Rata \pm SD	Setelah PBS (menit)					
		30		15		0	
		Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD
	157,22 \pm 21,53		121,71 \pm 26,86		96,69 \pm 30,39		150,21 \pm 37,00
237,87		197,52		199,33		107,54	
226,58		149,06		136,02		70,74	
113,89		151,51		137,87		75,88	
152,11		97,23		120,03		69,73	
145,19		94,37		111,17		78,22	
139,49		99,71		94,92		102,07	
108,44		106,68		88,35		80,28	
124,20		110,08		113,88		86,78	
131,40		106,47		135,62		79,26	
240,78		136,15		125,08		93,40	
164,35		78,59		96,82		113,89	
221,00		77,87		110,34		101,39	
228,23		113,43		84,60		85,87	
160,20		96,82		88,53		82,75	
164,30		58,82		78,92		86,60	
167,11		101,40		118,65		80,84	

205,66	59,46	91,29	94,76
165,28	86,60	62,14	72,34
153,47	104,23	111,92	75,47
161,07	74,93	96,21	92,89
128,66	84,62	97,72	59,85
178,03	90,73	102,00	75,22
162,31	67,50	87,81	86,12
186,92	48,10	158,86	84,82
154,56	88,67	102,34	80,37
158,36	47,61	131,47	74,45
170,50	70,50	107,38	64,55
129,05	123,99	117,89	65,58
152,71	72,14	135,60	70,53
168,28	82,23	96,21	99,90
125,16	63,66	148,22	85,85
127,11	109,31	147,92	93,62
154,45	82,52	102,45	80,26
150,74	78,92	99,70	71,90
156,85	77,55	75,48	60,24
148,70	63,66	100,50	92,29
145,01	109,56	88,35	82,49
96,28	88,33	116,30	80,38
151,79	118,10	96,28	84,16
192,25	89,70	92,70	112,59
105,89	88,35	118,17	105,11
202,37	113,68	115,35	88,42
217,32	92,73	120,55	88,41
120,85	117,53	91,64	86,74

196,62	130,71	140,81	94,18
133,01	70,09	97,42	99,12
139,31	89,19	59,38	94,76
124,97	99,27	119,69	68,29
233,37	106,24	70,40	94,44
90,97	95,89	101,99	106,73
167,44	76,49	80,63	72,37
150,66	125,83	103,48	87,12
115,42	87,87	120,07	66,88
101,02	89,36	91,99	139,92
127,32	114,47	76,37	89,26
111,48	109,45	106,05	84,60
93,95	86,44	103,81	121,36
213,19	103,78	97,86	56,83
135,53	77,87	115,97	82,86
115,01	64,05	91,93	124,27
188,70	98,18	77,85	64,99
80,16	78,72	89,72	73,00
99,73	96,12	95,52	90,57
159,22	57,50	84,17	66,16
118,37	40,82	77,43	77,87
142,00	79,75	88,53	73,71
127,09	179,33	93,87	101,27
109,66	92,65	84,82	106,68
128,78	72,58	127,58	74,71
98,18	74,84	90,40	66,88
136,19	66,83	87,45	82,15
192,25	76,27	121,25	65,00

92,43	62,58	109,24	75,12
168,32	60,91	130,53	81,59
176,17	84,62	132,74	58,14
148,54	161,82	86,80	54,08
131,55	87,99	78,32	81,89
145,00	114,77	89,04	71,70
179,97	89,88	94,92	82,07
129,60	135,94	62,36	97,07
125,87	128,59	117,92	56,83
135,17	125,51	89,04	46,64
147,23	53,94	95,48	78,82
127,69	90,72	86,05	103,63
155,33	112,68	124,41	48,29
162,24	116,34	123,45	53,37
143,79	77,49	114,78	47,25
164,33	95,16	193,96	107,96
223,94	115,26	174,01	97,62
187,99	85,53	150,34	82,49
88,20	85,71	188,12	73,60
117,92	177,04	140,82	126,73
101,69	194,46	138,07	82,49
144,67	145,99	85,91	123,99
114,78	67,79	110,41	128,58
218,21	49,96	126,06	92,72
140,20	115,69	113,41	119,03
126,13	107,98	152,13	147,90
159,60	110,08	112,21	91,14
140,11	103,78	101,70	87,44

Lampiran 4.4.5 Tabel Studi Ukuran Mikropartikel Formula 5

Tabel 15. Hasil uji studi ukuran mikropartikel formula 5 (β -CD 50%)

Sebelum PBS	Rata- Rata \pm SD	Setelah PBS (menit)					
		0		15		30	
		Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD	Diameter	Rata- Rata \pm SD
286,91	182,91 \pm 55,53	352,04	155,78 \pm 43,73	231,72	135,78 \pm 45,99	128,48	130,43 \pm 19,53
237,88		182,84		337,57		130,94	
152,72		127,47		243,37		139,97	
160,53		219,87		137,50		121,48	
184,54		151,02		118,77		160,38	
152,53		158,95		142,57		134,10	
196,19		77,87		102,91		134,45	
206,62		108,17		127,46		130,46	
166,74		108,17		164,68		155,37	
184,54		178,03		200,87		128,69	
158,83		76,95		310,79		156,83	
164,42		54,23		250,15		139,12	
261,11		59,85		158,42		120,07	
247,19		86,23		133,45		139,47	
129,09		87,55		106,37		123,92	
133,49		55,20		134,91		146,81	
168,21		83,07	139,04		132,70		
214,80		71,09	153,15		112,43		

176,92	89,17	156,54	178,22
224,84	113,90	153,74	127,04
231,44	115,26	161,08	147,30
119,35	109,57	200,37	97,91
207,44	83,25	128,29	76,27
194,30	145,15	107,97	135,30
219,05	127,14	144,54	68,29
148,90	113,41	198,27	70,82
181,81	131,05	136,95	82,99
152,71	79,75	155,98	53,19
164,14	73,28	124,78	43,94
205,62	100,93	144,16	62,15
229,58	101,69	110,69	52,80
251,66	99,71	139,97	182,51
174,10	55,99	121,48	128,44
205,88	83,07	160,38	69,43
236,49	66,88	219,15	113,91
154,60	90,97	238,96	80,18
189,34	75,93	168,82	73,64
173,43	83,69	198,79	102,32
188,83	77,13	217,58	73,60
190,22	95,36	178,38	66,93
194,61	53,79	183,83	47,08
171,01	109,50	164,65	40,26
191,50	65,95	171,98	89,18
151,07	98,65	185,10	65,97
177,55	91,91	176,48	78,44
196,91	90,49	144,79	70,40

143,20	50,84	164,49	46,93
229,10	39,16	265,78	86,07
238,53	47,74	146,11	62,85
118,14	121,74	108,47	57,51
90,49	84,41	129,67	64,05
194,82	60,61	130,26	50,72
244,86	87,98	105,13	59,56
212,06	70,41	166,36	138,04
278,82	29,07	166,18	110,06
158,89	52,06	163,22	78,30
153,48	37,97	193,08	78,59
200,46	60,24	126,39	64,49
292,57	70,43	158,59	85,77
99,88	45,65	174,32	101,03
141,68	47,62	148,60	61,41
181,96	47,62	149,32	80,39
227,69	90,72	104,82	98,48
125,19	25,72	156,55	74,31
159,34	29,91	81,03	76,67
217,89	52,47	123,33	48,10
161,06	53,19	152,55	49,77
147,78	50,87	121,55	89,04
125,06	55,06	155,68	121,28
122,51	71,17	119,63	62,56
222,94	89,70	161,79	87,98
106,97	50,08	157,39	69,10
203,41	60,24	200,24	78,71
248,98	72,13	117,53	53,13

197,51	42,88	163,73	97,78
200,36	59,11	165,74	76,09
216,87	92,89	122,07	95,48
359,49	63,84	127,52	76,68
308,84	47,33	129,84	139,42
182,77	93,46	112,06	92,89
141,18	40,82	201,40	87,38
165,53	52,64	122,06	65,70
221,03	48,37	84,62	84,25
294,99	74,93	124,17	70,51
153,37	49,85	238,43	62,60
127,68	78,52	104,31	71,95
124,53	74,45	107,20	60,74
101,99	44,11	222,61	54,08
210,15	69,78	187,74	84,90
48,88	50,83	144,73	58,83
60,61	50,84	161,66	58,82
139,65	88,54	109,30	51,18
136,89	56,03	137,40	51,33
146,89	54,08	86,07	47,30
324,45	73,78	129,13	75,56
82,53	90,02	95,90	57,91
102,89	32,36	79,62	56,71
110,75	49,03	135,60	65,00
181,83	84,23	188,31	73,30
191,61	90,13	161,08	73,64

Lampiran 4.5 Tabel Uji Difusi Pelarut

Lampiran 4.5.1 Tabel Uji Difusi Pelarut Formula F1 (β -CD 10%)

Tabel 16. Hasil uji difusi pelarut formula 1 (β -CD 10%)

Waktu (jam)	Diameter (cm)	Rata-rata
0	6,00	6,05
	6,10	
	6,05	
0,25	8,20	8,35
	8,41	
	8,45	
0,5	9,10	9,11
	9,11	
	9,14	
1	9,34	9,40
	9,55	
	9,33	
2	10,20	10,13
	10,11	
	10,10	
3	13,85	13,44
	13,60	
	12,87	
24	28,20	28,85
	29,20	
	29,15	

Lampiran 4.5.2 Tabel Uji Difusi Pelarut Formula F2 (β -CD 20%)

Tabel 17. Hasil uji difusi pelarut formula 2 (β -CD 20%)

Waktu (jam)	Diameter (cm)	Rata-rata
0	6,00	6,11
	6,00	
	6,35	
0,25	8,25	8,41
	8,43	
	8,57	
0,5	9,10	9,14
	9,14	
	9,19	
1	9,40	9,52
	9,65	
	9,53	
	10,10	

2	10,17	10,14
	10,15	
3	14,35	14,44
	14,40	
	14,57	
24	30,20	30,95
	31,20	
	31,45	

Lampiran 4.5.3 Tabel Uji Difusi Pelarut Formula F3 (β -CD 30%)

Tabel 18. Hasil uji difusi pelarut formula 3 (β -CD 30%)

Waktu (jam)	Diameter (cm)	Rata-rata
0	6,00	6,13
	6,10	
	6,30	
0,25	8,05	8,15
	8,33	
	8,07	
0,5	8,10	8,21
	8,34	
	8,19	
1	9,10	9,12
	9,15	
	9,13	
2	9,10	9,14
	9,17	
	9,15	
3	9,35	9,54
	9,70	
	9,57	
24	23,10	23,61
	24,30	
	23,45	

Lampiran 4.5.4 Tabel Uji Difusi Pelarut Formula F4 (β -CD 40%)

Tabel 19. Hasil uji difusi pelarut formula 4 (β -CD 40%)

Waktu (jam)	Diameter (cm)	Rata-rata
0	6,00	6,10
	6,20	
	6,10	
0,25	8,03	8,13
	8,32	
	8,05	

0,5	8,05	8,16
	8,33	
	8,12	
1	8,21	8,25
	8,34	
	8,20	
2	9,10	9,06
	9,05	
	9,03	
3	9,15	9,29
	9,35	
	9,37	
24	15,10	15,29
	15,31	
	15,46	

Lampiran 4.5.5 Tabel Uji Difusi Pelarut Formula F5 (β -CD 50%)

Tabel 20. Hasil uji difusi pelarut formula 5 (β -CD 50%)

Waktu (jam)	Diameter (cm)	Rata-rata
0	6,00	6,23
	6,50	
	6,20	
0,25	8,01	8,07
	8,22	
	8,00	
0,5	8,01	8,12
	8,24	
	8,12	
1	8,20	8,22
	8,28	
	8,20	
2	9,01	9,01
	9,03	
	9,00	
3	9,15	9,26
	9,35	
	9,30	
24	10,00	10,28
	10,41	
	10,45	

Lampiran 4.6 Studi *In Vitro* Pelepasan Obat

Lampiran 4.6.1 Studi *In Vitro* Pelepasan Obat Formula 1

Tabel 21. Hasil uji studi *in vitro* pelepasan obat formula 1 (β -CD 10%)

FORMULA 1 (10% β)								
Waktu	Serapan	Konsentrasi ($\mu\text{g/ml}$)	100 ml (mg)	Faktor Koreksi	Pelepasan (mg)	Average (mg)	% Pelepasan	Average (%)
0,25	0.098	2.412	3.859	0.000	3.859		7.718	7.387
	0.091	2.231	3.569	0.000	3.569		7.138	
	0.093	2.282	3.652	0.000	3.652	3.693	7.304	
0,5	0.095	2.334	3.735	0.002	3.737		7.474	7.695
	0.099	2.438	3.901	0.002	3.903		7.805	
	0.099	2.438	3.901	0.002	3.903	3.848	7.806	
0,75	0.101	2.490	3.983	0.005	3.988		7.976	8.363
	0.107	2.645	4.232	0.005	4.237		8.474	
	0.109	2.697	4.315	0.005	4.320	4.182	8.639	
1	0.112	2.775	4.439	0.007	4.447		8.893	12.320
	0.173	4.355	6.968	0.007	6.975		13.950	
	0.175	4.407	7.051	0.007	7.058	6.160	14.116	
2	0.176	4.433	7.092	0.010	7.102		14.204	15.091
	0.192	4.847	7.755	0.012	7.767		15.534	
	0.192	4.847	7.755	0.012	7.767	7.546	15.535	
3	0.192	4.847	7.755	0.014	7.770		15.540	16.427
	0.208	5.262	8.419	0.017	8.435		16.870	
	0.208	5.262	8.419	0.017	8.435	8.213	16.871	
4	0.210	5.313	8.502	0.019	8.521		17.042	17.460
	0.216	5.469	8.750	0.022	8.772	8.730	17.544	

	0.219	5.547	8.875	0.022	8.897		17.793	
	0.222	5.624	8.999	0.025	9.024		18.047	18.714
5	0.234	5.935	9.496	0.027	9.524		19.047	
	0.234	5.935	9.496	0.027	9.524	9.357	19.048	
	0.236	5.987	9.579	0.030	9.610		19.219	19.306
6	0.236	5.987	9.579	0.033	9.612		19.225	
	0.239	6.065	9.704	0.033	9.737	9.653	19.474	
	0.242	6.142	9.828	0.036	9.864		19.728	19.760
	0.242	6.142	9.828	0.039	9.867		19.734	
12	0.243	6.168	9.869	0.039	9.909	9.880	19.818	
	0.245	6.220	9.952	0.042	9.995		19.989	22.038
	0.280	7.127	11.403	0.045	11.448		22.897	
24	0.284	7.231	11.569	0.046	11.615	11.019	23.229	
	0.284	7.231	11.569	0.049	11.617		23.235	23.406
	0.286	7.282	11.652	0.052	11.704		23.409	
36	0.288	7.334	11.735	0.053	11.788	11.703	23.575	
	0.291	7.412	11.859	0.056	11.915		23.830	24.277
	0.299	7.619	12.191	0.060	12.250		24.501	
48	0.299	7.619	12.191	0.060	12.251	12.139	24.502	
	0.301	7.671	12.274	0.063	12.337		24.674	24.735
	0.302	7.697	12.315	0.067	12.382		24.765	
60	0.302	7.697	12.315	0.068	12.383	12.367	24.766	
	0.302	7.697	12.315	0.071	12.386		24.772	25.054
	0.307	7.826	12.522	0.075	12.597		25.195	
72	0.307	7.826	12.522	0.076	12.598	12.527	25.196	
	0.317	8.085	12.937	0.079	13.015		26.031	26.285
84	0.321	8.189	13.103	0.083	13.185	13.143	26.371	

	0.322	8.215	13.144	0.083	13.227		26.455	
	0.325	8.293	13.268	0.087	13.355		26.710	27.020
96	0.329	8.396	13.434	0.091	13.525		27.050	
	0.332	8.474	13.559	0.092	13.650	13.510	27.300	
	0.333	8.500	13.600	0.095	13.695		27.390	27.452
108	0.333	8.500	13.600	0.099	13.699		27.399	
	0.335	8.552	13.683	0.100	13.783	13.726	27.566	
	0.346	8.837	14.139	0.103	14.242		28.485	28.767
120	0.350	8.940	14.305	0.108	14.413		28.825	
	0.352	8.992	14.388	0.109	14.496	14.384	28.992	
	0.360	9.199	14.719	0.112	14.831		29.663	29.808
132	0.361	9.225	14.761	0.117	14.878		29.755	
	0.364	9.303	14.885	0.118	15.003	14.904	30.005	
	0.364	9.303	14.885	0.122	15.006		30.013	30.268
144	0.368	9.407	15.051	0.126	15.177		30.354	
	0.369	9.433	15.092	0.127	15.219	15.134	30.438	
	0.372	9.510	15.217	0.131	15.347		30.695	30.867
156	0.374	9.562	15.299	0.136	15.435		30.870	
	0.376	9.614	15.382	0.136	15.519	15.434	31.037	
	0.392	10.028	16.046	0.140	16.186		32.372	32.462
168	0.395	10.106	16.170	0.145	16.315		32.630	
	0.392	10.028	16.046	0.146	16.192	16.231	32.383	

Tabel 22. Hasil Uji Kinetika Pelepasan Obat Formula 1 Kinetika model *Korsmeyer-Peppas*

Goodness of Fit	
Parameter	No,1
N_observed	19
DF	17
R_obs-pre	0,9711
Rsqr	0,9422
Rsqr_adj	0,9388
MSE	4,3374
MSE_root	2,0826
Weighting	1
SS	73,7361
WSS	73,7361
AIC	85,7094
MSC	2,6400

Lampiran 4.6.2 Studi *In Vitro* Pelepasan Obat Formula 2Tabel 23. Hasil uji studi *in vitro* pelepasan obat formula 2 (β -CD 20%)

FORMULA 2 (20% β)								
Waktu	Serapan	Konsentrasi ($\mu\text{g/ml}$)	100 ml (mg)	Faktor Koreksi	Pelepasan (mg)	Average (mg)	% Pelepasan	Average (%)
0,25	0.076	1.842	2.947	0.000	2.947		5.894	8.768
	0.128	3.189	5.103	0.000	5.103		10.205	
	0.128	3.189	5.103	0.000	5.103	4.384	10.205	
0,5	0.128	3.189	5.103	0.002	5.104		10.209	10.487
	0.133	3.319	5.310	0.003	5.313		10.626	
	0.133	3.319	5.310	0.003	5.313	5.244	10.626	
0,75	0.141	3.526	5.641	0.005	5.646	5.744	11.293	11.488

	0.143	3.578	5.724	0.007	5.731		11.462	
	0.146	3.655	5.849	0.007	5.855		11.710	
1	0.146	3.655	5.849	0.009	5.857		11.715	11.800
	0.146	3.655	5.849	0.010	5.859		11.718	
	0.149	3.733	5.973	0.010	5.983	5.900	11.966	
	0.154	3.863	6.180	0.012	6.193		12.385	12.470
2	0.154	3.863	6.180	0.014	6.194		12.388	
	0.157	3.940	6.305	0.014	6.319	6.235	12.637	
	0.193	4.873	7.797	0.016	7.813		15.626	15.849
3	0.196	4.951	7.921	0.018	7.939		15.878	
	0.198	5.003	8.004	0.018	8.022	7.925	16.044	
	0.201	5.080	8.128	0.021	8.149		16.299	16.301
4	0.201	5.080	8.128	0.023	8.151		16.302	
	0.201	5.080	8.128	0.023	8.151	8.151	16.303	
	0.201	5.080	8.128	0.026	8.155		16.309	16.643
5	0.206	5.210	8.336	0.028	8.363		16.727	
	0.208	5.262	8.419	0.028	8.447	8.321	16.893	
	0.209	5.288	8.460	0.031	8.491		16.982	17.095
6	0.211	5.339	8.543	0.033	8.576		17.152	
	0.211	5.339	8.543	0.033	8.576	8.548	17.152	
	0.217	5.495	8.792	0.036	8.828		17.656	17.659
12	0.217	5.495	8.792	0.038	8.830		17.660	
	0.217	5.495	8.792	0.039	8.830	8.829	17.660	
	0.223	5.650	9.040	0.042	9.082		18.165	18.333
24	0.223	5.650	9.040	0.044	9.084		18.168	
	0.229	5.806	9.289	0.044	9.333	9.167	18.666	
	0.242	6.142	9.828	0.048	9.876	9.877	19.751	19.754

36	0.242	6.142	9.828	0.049	9.877		19.755	
	0.242	6.142	9.828	0.050	9.878		19.756	
48	0.245	6.220	9.952	0.054	10.006		20.012	20.098
	0.245	6.220	9.952	0.055	10.008		20.016	
	0.248	6.298	10.077	0.056	10.133	10.049	20.265	
60	0.252	6.402	10.242	0.060	10.302		20.605	20.608
	0.252	6.402	10.242	0.062	10.304		20.608	
	0.252	6.402	10.242	0.062	10.305	10.304	20.609	
72	0.262	6.661	10.657	0.066	10.723		21.447	21.615
	0.265	6.738	10.781	0.068	10.849		21.699	
	0.265	6.738	10.781	0.069	10.850	10.808	21.700	
84	0.289	7.360	11.776	0.073	11.849		23.698	23.701
	0.290	7.386	11.818	0.075	11.892		23.785	
	0.288	7.334	11.735	0.075	11.810	11.851	23.620	
96	0.298	7.593	12.149	0.080	12.230		24.459	25.125
	0.300	7.645	12.232	0.082	12.314		24.629	
	0.320	8.163	13.061	0.083	13.144	12.563	26.288	
108	0.300	7.645	12.232	0.088	12.320		24.640	25.970
	0.324	8.267	13.227	0.090	13.317		26.634	
	0.324	8.267	13.227	0.091	13.318	12.985	26.636	
120	0.325	8.293	13.268	0.096	13.364		26.728	26.925
	0.328	8.370	13.393	0.098	13.491		26.982	
	0.329	8.396	13.434	0.099	13.533	13.463	27.067	
132	0.332	8.474	13.559	0.104	13.662		27.325	27.329
	0.331	8.448	13.517	0.107	13.624		27.247	
	0.333	8.500	13.600	0.108	13.708	13.665	27.415	
	0.337	8.604	13.766	0.112	13.878	14.018	27.756	28.037

144	0.339	8.655	13.849	0.115	13.964		27.927	
	0.345	8.811	14.097	0.116	14.213		28.427	
156	0.345	8.811	14.097	0.121	14.218		28.437	28.579
	0.346	8.837	14.139	0.124	14.262		28.525	
	0.349	8.915	14.263	0.125	14.388	14.290	28.776	
168	0.360	9.199	14.719	0.130	14.849		29.698	29.426
	0.360	9.199	14.719	0.132	14.852		29.703	
	0.350	8.940	14.305	0.134	14.438	14.713	28.877	

Tabel 24. Hasil Uji Kinetika Pelepasan Obat Formula 2 Kinetika model *Korsmeyer-Peppas*

Goodness of Fit	
Parameter	No,1
N_observed	19
DF	17
R_obs-pre	0,8925
Rsqr	0,7956
Rsqr_adj	0,7836
MSE	5,8492
MSE_root	2,4185
Weighting	1
SS	99,4366
WSS	99,4366
AIC	91,3909
MSC	1,3773

Lampiran 4.6.3 Studi *In Vitro* Pelepasan Obat Formula 3

Tabel 25. Hasil uji studi *in vitro* pelepasan obat formula 3 (β -CD 30%)

FORMULA 3 (30% β)								
Waktu	Serapan	Konsentrasi ($\mu\text{g/ml}$)	100 ml (mg)	Faktor Koreksi	Pelepasan (mg)	Average (mg)	% Pelepasan	Average (%)
0,25	0.074	1.790	2.864	0.000	2.864		5.728	5.811
	0.074	1.790	2.864	0.000	2.864		5.728	
	0.077	1.868	2.989	0.000	2.989	2.906	5.977	
0,5	0.091	2.231	3.569	0.002	3.571		7.141	7.307
	0.093	2.282	3.652	0.002	3.654		7.307	
	0.095	2.334	3.735	0.002	3.737	3.654	7.473	
0,75	0.099	2.438	3.901	0.004	3.905		7.809	7.809
	0.099	2.438	3.901	0.004	3.905		7.809	
	0.099	2.438	3.901	0.004	3.905	3.905	7.809	
1	0.100	2.464	3.942	0.006	3.948		7.897	7.925
	0.100	2.464	3.942	0.007	3.948		7.897	
	0.101	2.490	3.983	0.007	3.990	3.962	7.980	
2	0.101	2.490	3.983	0.009	3.992		7.985	8.151
	0.103	2.541	4.066	0.009	4.075		8.151	
	0.105	2.593	4.149	0.009	4.158	4.075	8.317	
3	0.107	2.645	4.232	0.011	4.244		8.487	8.681
	0.109	2.697	4.315	0.012	4.327		8.653	
	0.112	2.775	4.439	0.012	4.451	4.340	8.902	
4	0.128	3.189	5.103	0.014	5.117		10.233	10.510
	0.133	3.319	5.310	0.014	5.324		10.648	
	0.133	3.319	5.310	0.014	5.324	5.255	10.649	
5	0.137	3.422	5.476	0.017	5.493	5.618	10.986	11.235

	0.139	3.474	5.559	0.018	5.576		11.152	
	0.144	3.604	5.766	0.018	5.784		11.567	
6	0.144	3.604	5.766	0.021	5.786		11.573	11.712
	0.145	3.630	5.807	0.021	5.828		11.657	
	0.148	3.707	5.932	0.021	5.953	5.856	11.906	
	0.173	4.355	6.968	0.024	6.992		13.984	14.123
12	0.175	4.407	7.051	0.025	7.075		14.151	
	0.176	4.433	7.092	0.025	7.117	7.062	14.235	
	0.180	4.536	7.258	0.029	7.287		14.573	14.602
24	0.180	4.536	7.258	0.029	7.287		14.574	
	0.181	4.562	7.299	0.030	7.329	7.301	14.658	
	0.181	4.562	7.299	0.033	7.333		14.665	14.777
36	0.182	4.588	7.341	0.034	7.375		14.749	
	0.184	4.640	7.424	0.034	7.458	7.388	14.916	
	0.190	4.795	7.673	0.038	7.710		15.421	15.477
48	0.190	4.795	7.673	0.038	7.711		15.421	
	0.192	4.847	7.755	0.039	7.794	7.738	15.588	
	0.198	5.003	8.004	0.043	8.047		16.093	16.177
60	0.199	5.028	8.046	0.043	8.089		16.177	
	0.200	5.054	8.087	0.044	8.131	8.089	16.261	
	0.210	5.313	8.502	0.048	8.549		17.098	17.652
72	0.210	5.313	8.502	0.048	8.550		17.099	
	0.230	5.832	9.331	0.049	9.379	8.826	18.758	
	0.240	6.091	9.745	0.053	9.798		19.596	19.404
84	0.230	5.832	9.331	0.053	9.384		18.768	
	0.243	6.168	9.869	0.054	9.924	9.702	19.848	
	0.256	6.505	10.408	0.059	10.467	10.399	20.934	20.798

96	0.254	6.453	10.325	0.059	10.385		20.769	
	0.253	6.427	10.284	0.061	10.345		20.689	
108	0.260	6.609	10.574	0.065	10.640		21.279	21.750
	0.268	6.816	10.906	0.066	10.971		21.943	
	0.269	6.842	10.947	0.067	11.014	10.875	22.028	
120	0.276	7.023	11.237	0.072	11.309		22.619	22.675
	0.277	7.049	11.279	0.072	11.351		22.702	
	0.277	7.049	11.279	0.074	11.353	11.338	22.705	
132	0.287	7.308	11.693	0.079	11.772		23.545	23.629
	0.288	7.334	11.735	0.079	11.814		23.628	
	0.289	7.360	11.776	0.081	11.857	11.815	23.714	
144	0.292	7.438	11.901	0.086	11.987		23.974	23.948
	0.293	7.464	11.942	0.087	12.029		24.058	
	0.290	7.386	11.818	0.088	11.906	11.974	23.812	
156	0.298	7.593	12.149	0.094	12.243		24.486	24.875
	0.310	7.904	12.647	0.094	12.741		25.482	
	0.300	7.645	12.232	0.096	12.328	12.437	24.656	
168	0.320	8.163	13.061	0.101	13.163		26.325	27.432
	0.340	8.681	13.890	0.102	13.992		27.985	
	0.340	8.681	13.890	0.103	13.994	13.716	27.987	

Tabel 26. Hasil Uji Kinetika Pelepasan Obat Formula 3 Kinetika model *Korsmeyer-Peppas*

Goodness of Parameter	No,1
N_observed	19
DF	17
R_obs-pre	0,9611

Rsqr	0,9237
Rsqr_adj	0,9192
MSE	4,3014
MSE_root	2,0740
Weighting	1
SS	73,1235
WSS	73,1235
AIC	85,5509
MSC	2,3626

Lampiran 4.6.4 Studi *In Vitro* Pelepasan Obat Formula 4

Tabel 27. Hasil uji studi *in vitro* pelepasan obat formula 4 (β -CD 40%)

FORMULA 4 (40% β)								
Waktu	Serapan	Konsentrasi ($\mu\text{g/ml}$)	100 ml (mg)	Faktor Koreksi	Pelepasan (mg)	Average (mg)	% Pelepasan	Average (%)
0,25	0.103	2.541	4.066	0.000	4.066	4.094	8.133	8.188
	0.103	2.541	4.066	0.000	4.066		8.133	
	0.105	2.593	4.149	0.000	4.149		8.298	
0,5	0.105	2.593	4.149	0.003	4.152	4.152	8.304	8.304
	0.105	2.593	4.149	0.003	4.152		8.304	
	0.105	2.593	4.149	0.003	4.152		8.304	
0,75	0.108	2.671	4.274	0.005	4.279	4.472	8.557	8.944
	0.114	2.826	4.522	0.005	4.527		9.055	
	0.116	2.878	4.605	0.005	4.610		9.221	
1	0.129	3.215	5.144	0.008	5.152	5.152	10.304	10.304
	0.129	3.215	5.144	0.008	5.152		10.304	
	0.129	3.215	5.144	0.008	5.152		10.304	

2	0.129	3.215	5.144	0.011	5.155	5.210	10.310	10.421
	0.131	3.267	5.227	0.011	5.238		10.476	
	0.131	3.267	5.227	0.011	5.238		10.476	
3	0.140	3.500	5.600	0.014	5.614	5.642	11.228	11.284
	0.140	3.500	5.600	0.014	5.614		11.229	
	0.142	3.552	5.683	0.015	5.697		11.395	
4	0.142	3.552	5.683	0.018	5.701	5.701	11.401	11.402
	0.142	3.552	5.683	0.018	5.701		11.402	
	0.142	3.552	5.683	0.018	5.701		11.402	
5	0.144	3.604	5.766	0.021	5.787	5.787	11.574	11.575
	0.144	3.604	5.766	0.021	5.787		11.575	
	0.144	3.604	5.766	0.022	5.787		11.575	
6	0.148	3.707	5.932	0.025	5.956	5.957	11.913	11.913
	0.148	3.707	5.932	0.025	5.957		11.913	
	0.148	3.707	5.932	0.025	5.957		11.914	
12	0.148	3.707	5.932	0.029	5.960	6.016	11.920	12.031
	0.149	3.733	5.973	0.029	6.002		12.004	
	0.151	3.785	6.056	0.029	6.085		12.170	
24	0.152	3.811	6.097	0.032	6.130	6.158	12.259	12.315
	0.153	3.837	6.139	0.033	6.171		12.343	
	0.153	3.837	6.139	0.033	6.172		12.343	
36	0.162	4.070	6.512	0.036	6.548	6.604	13.096	13.207
	0.164	4.122	6.595	0.036	6.631		13.262	
	0.164	4.122	6.595	0.037	6.631		13.263	
48	0.164	4.122	6.595	0.040	6.635	6.663	13.270	13.326
	0.164	4.122	6.595	0.040	6.635		13.271	
	0.166	4.174	6.678	0.041	6.718		13.437	

60	0.170	4.277	6.844	0.044	6.888	7.040	13.776	14.080
	0.174	4.381	7.009	0.045	7.054		14.108	
	0.177	4.459	7.134	0.045	7.179		14.357	
72	0.197	4.977	7.963	0.049	8.011	8.095	16.023	16.189
	0.199	5.028	8.046	0.049	8.095		16.189	
	0.201	5.080	8.128	0.049	8.178		16.356	
84	0.201	5.080	8.128	0.054	8.182	8.321	16.364	16.641
	0.203	5.132	8.211	0.054	8.265		16.531	
	0.209	5.288	8.460	0.054	8.515		17.029	
96	0.214	5.417	8.667	0.059	8.726	9.404	17.452	18.807
	0.237	6.013	9.621	0.059	9.680		19.360	
	0.240	6.091	9.745	0.060	9.805		19.610	
108	0.240	6.091	9.745	0.064	9.809	10.114	19.618	20.228
	0.251	6.376	10.201	0.065	10.266		20.532	
	0.251	6.376	10.201	0.066	10.267		20.534	
120	0.258	6.557	10.491	0.070	10.561	10.562	21.123	21.125
	0.258	6.557	10.491	0.072	10.563		21.125	
	0.258	6.557	10.491	0.072	10.563		21.127	
132	0.262	6.661	10.657	0.077	10.734	10.776	21.467	21.553
	0.263	6.687	10.698	0.078	10.777		21.553	
	0.264	6.712	10.740	0.079	10.819		21.637	
144	0.271	6.894	11.030	0.083	11.113	11.101	22.227	22.202
	0.271	6.894	11.030	0.085	11.115		22.230	
	0.270	6.868	10.989	0.085	11.074		22.148	
156	0.289	7.360	11.776	0.090	11.866	11.840	23.733	23.680
	0.288	7.334	11.735	0.092	11.826		23.653	
	0.288	7.334	11.735	0.092	11.827		23.654	

168	0.300	7.645	12.232	0.098	12.330	12.745	24.659	25.491
	0.320	8.163	13.061	0.099	13.160		26.320	
	0.310	7.904	12.647	0.100	12.746		25.493	

Tabel 28. Hasil Uji Kinetika Pelepasan Obat Formula 4 Kinetika model *Korsmeyer-Peppas*

Goodness of	
Parameter	No,1
N_observed	19
DF	17
R_obs-pre	0,9752
Rsqr	0,9507
Rsqr_adj	0,9478
MSE	1,0558
MSE_root	1,0275
Weighting	1
SS	17,9479
WSS	17,9479
AIC	58,8620
MSC	2,7984

Lampiran 4.6.5 Studi *In Vitro* Pelepasan Obat Formula 5

Tabel 29. Hasil uji studi *in vitro* pelepasan obat formula 5 (β -CD 50%)

FORMULA 5 (50% β)								
Waktu	Serapan	Konsentrasi (μ g/ml)	100 ml (mg)	Faktor Koreksi	Pelepasan (mg)	Average (mg)	% Pelepasan	Average (%)
0,25	0.035	0.780	1.248	0.000	1.248		2.495	2.661
	0.037	0.832	1.331	0.000	1.331	1.331	2.661	

	0.039	0.883	1.413	0.000	1.413		2.827	
0,5	0.041	0.935	1.496	0.001	1.497	1.525	2.994	3.050
	0.041	0.935	1.496	0.001	1.497		2.994	
	0.043	0.987	1.579	0.001	1.580		3.160	
0,75	0.048	1.117	1.787	0.002	1.788		3.576	3.853
	0.052	1.220	1.952	0.002	1.954		3.908	
	0.054	1.272	2.035	0.002	2.037	1.926	4.074	
1	0.054	1.272	2.035	0.003	2.038	2.066	4.076	4.132
	0.054	1.272	2.035	0.003	2.038		4.076	
	0.056	1.324	2.118	0.003	2.121		4.243	
2	0.056	1.324	2.118	0.004	2.122	2.205	4.244	4.411
	0.058	1.376	2.201	0.004	2.205		4.411	
	0.060	1.427	2.284	0.004	2.288		4.577	
3	0.065	1.557	2.491	0.005	2.497	2.607	4.993	5.215
	0.069	1.661	2.657	0.006	2.663		5.325	
	0.069	1.661	2.657	0.006	2.663		5.326	
4	0.072	1.738	2.781	0.007	2.788	2.844	5.577	5.688
	0.074	1.790	2.864	0.007	2.872		5.743	
	0.074	1.790	2.864	0.008	2.872		5.744	
5	0.074	1.790	2.864	0.009	2.873	2.929	5.746	5.857
	0.076	1.842	2.947	0.009	2.956		5.912	
	0.076	1.842	2.947	0.009	2.956		5.913	
6	0.076	1.842	2.947	0.011	2.958	2.958	5.915	5.916
	0.076	1.842	2.947	0.011	2.958		5.916	
	0.076	1.842	2.947	0.011	2.958		5.917	
12	0.110	2.723	4.356	0.012	4.369		8.738	9.015
	0.110	2.723	4.356	0.013	4.369	4.507	8.738	

	0.120	2.982	4.771	0.013	4.784		9.568	
24	0.128	3.189	5.103	0.015	5.118	5.132	10.235	10.264
	0.128	3.189	5.103	0.015	5.118		10.236	
	0.129	3.215	5.144	0.016	5.160		10.320	
36	0.130	3.241	5.185	0.018	5.204	5.273	10.408	10.547
	0.132	3.293	5.268	0.019	5.287		10.574	
	0.133	3.319	5.310	0.019	5.329		10.658	
48	0.135	3.370	5.393	0.022	5.414	5.442	10.829	10.885
	0.136	3.396	5.434	0.022	5.456		10.912	
	0.136	3.396	5.434	0.023	5.457		10.913	
60	0.142	3.552	5.683	0.025	5.708	5.750	11.416	11.499
	0.143	3.578	5.724	0.025	5.750		11.499	
	0.144	3.604	5.766	0.026	5.792		11.583	
72	0.167	4.199	6.719	0.028	6.748	6.762	13.495	13.524
	0.167	4.199	6.719	0.029	6.748		13.496	
	0.168	4.225	6.761	0.030	6.790		13.580	
84	0.172	4.329	6.926	0.033	6.959	6.987	13.918	13.974
	0.172	4.329	6.926	0.033	6.960		13.919	
	0.174	4.381	7.009	0.034	7.043		14.086	
96	0.185	4.666	7.465	0.037	7.502	7.586	15.004	15.171
	0.187	4.718	7.548	0.037	7.586		15.171	
	0.189	4.769	7.631	0.038	7.669		15.338	
108	0.196	4.951	7.921	0.042	7.963	8.046	15.926	16.093
	0.199	5.028	8.046	0.042	8.088		16.176	
	0.199	5.028	8.046	0.043	8.089		16.177	
120	0.210	5.313	8.502	0.047	8.548		17.096	16.545
	0.200	5.054	8.087	0.047	8.134	8.272	16.269	

	0.200	5.054	8.087	0.048	8.135		16.270	
	0.230	5.832	9.331	0.052	9.382	8.830	18.765	17.661
132	0.220	5.573	8.916	0.052	8.968		17.937	
	0.200	5.054	8.087	0.053	8.140		16.280	
	0.240	6.091	9.745	0.058	9.803		19.606	19.744
144	0.240	6.091	9.745	0.058	9.803		19.606	
	0.245	6.220	9.952	0.058	10.010	9.872	20.021	
	0.253	6.427	10.284	0.064	10.348	10.334	20.695	20.668
156	0.251	6.376	10.201	0.064	10.265		20.530	
	0.254	6.453	10.325	0.064	10.390		20.779	
	0.266	6.764	10.823	0.070	10.893	10.852	21.786	21.704
168	0.268	6.816	10.906	0.070	10.976		21.952	
	0.261	6.635	10.616	0.071	10.686		21.373	

Tabel 30. Hasil Uji Kinetika Pelepasan Obat Formula 5 Kinetika model Korsmeyer-Peppas

Goodness of Fit	
Parameter	No,1
N_observed	19
DF	17
R_obs-pre	0,9848
Rsqr	0,9699
Rsqr_adj	0,9681
MSE	0,3654
MSE_root	0,6045
Weighting	1
SS	6,2126
WSS	6,2126
AIC	38,7052

Tabel 31. Data fluks pelepasan in vitro pada jam ke-168

Formula	Absorbansi	Konsentrasi (µg/ml)	Disolusi	Rata-rata	SD	Disolusi kumulatif	Rata-rata	SD	Fluks (µg/cm ² ,jam)	Rata-rata	SD
F1	0.392	10.028	2139.413	2144.940	9.573	32073.506	32817.778	649.868	190.914	195.344	3.868
	0.395	10.106	2155.993			33107.012			197.066		
	0.392	10.028	2139.413			33272.815			198.052		
F2	0.36	9.199	1962.556	1944.134	31.909	29641.727	30102.291	415.403	176.439	179.180	2.473
	0.36	9.199	1962.556			30216.511			179.860		
	0.35	8.940	1907.288			30448.636			181.242		
F3	0.32	8.163	1741.485	1815.176	63.818	23374.370	23641.497	265.304	139.133	140.723	1.579
	0.34	8.681	1852.021			23645.181			140.745		
	0.34	8.681	1852.021			23904.940			142.291		
F4	0.3	7.645	1630.950	1686.218	55.268	22456.926	22755.371	261.341	133.672	135.449	1.556
	0.32	8.163	1741.485			22865.907			136.107		
	0.31	7.904	1686.218			22943.282			136.567		
F5	0.266	6.764	1443.040	1437.513	19.927	16427.219	16462.222	39.210	97.781	97.989	0.233
	0.268	6.816	1454.093			16454.853			97.946		
	0.261	6.635	1415.406			16504.594			98.242		

Lampiran 6. Data hasil analisis statistika

Lampiran 6.1 Uji viskositas

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	formula	Statistic	df	Sig,	Statistic	df	Sig,
viskositas	F1	,253	3	,	,964	3	,637
	F2	,321	3	,	,881	3	,328
	F3	,219	3	,	,987	3	,780
	F4	,253	3	,	,964	3	,637
	F5'	,276	3	,	,942	3	,537

a, Lilliefors Significance Correction

ANOVA

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	1509334826,6	4	377333706,66	129,177	,000
Within Groups	29210666,667	10	2921066,667	7	
Total	1538545493,3	14			
	33				

Lampiran 6.2 Studi Ukuran Mikropartikel

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig,	Statistic	df	Sig,
Sebelum	F1	,196	30	,005	,902	30	,009
	F2	,220	30	,001	,887	30	,004
	F3	,146	30	,103	,906	30	,012
	F4	,223	30	,001	,896	30	,007
	F5	,199	30	,004	,914	30	,019
Sesudah	F1	,096	30	,200*	,959	30	,292
	F2	,137	30	,156	,875	30	,002
	F3	,264	30	,000	,717	30	,000
	F4	,200	30	,004	,843	30	,000
	F5	,139	30	,144	,924	30	,035

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

a, Lilliefors Significance Correction

Wilcoxon Signed Ranks Test

		Ranks		
		N	Mean Rank	Sum of Ranks
Sesudah - Sebelum	Negative Ranks	14 ^a	14,86	208,00
	Positive Ranks	136 ^b	81,74	11117,00
	Ties	0 ^c		
	Total	150		

a, Sesudah < Sebelum

b, Sesudah > Sebelum

c, Sesudah = Sebelum

Test Statistics^a

Sesudah - Sebelum

Z	-10,234 ^b
Asymp, Sig, (2-tailed)	,000

a, Wilcoxon Signed Ranks Test

b, Based on negative ranks,

Lampiran 5.3 Uji Difusi Pelarut

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig,	Statistic	df	Sig,
Diameter	F1	,206	42	,000	,918	42	,005
	F2	,285	42	,000	,752	42	,000
	F3	,419	42	,000	,598	42	,000
	F4	,341	40	,000	,649	40	,000
	F5	,322	21	,000	,678	21	,000

a, Lilliefors Significance Correction

Test Statistics^{a,b}

Diameter

Kruskal-Wallis H	17,976
df	4
Asymp, Sig,	,001

a, Kruskal Wallis Test

b, Grouping Variable: Formula

Lampiran 6.4 Studi *In Vitro* Pelepasan Obat

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig,	Statistic	df	Sig,
Pelepasan	F1	,337	3	,	,855	3	,253
	F2	,383	3	,	,754	3	,008
	F3	,247	3	,	,969	3	,663
	F4	,383	3	,	,754	3	,009
	F5	,252	3	,	,965	3	,642

a, Lilliefors Significance Correction

Kruskal-Wallis

Test Statistics^{a,b}

		Pelepasan
Kruskal-Wallis H		13,233
df		4
Asymp, Sig,		,010

a, Kruskal Wallis Test

b, Grouping Variable: Formula

Lampiran 5.5 Data hasil fluks

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig,	Statistic	df	Sig,
Fluks	F1	,333	3	,	,861	3	,270
	F2	,301	3	,	,912	3	,426
	F3	,247	3	,	,969	3	,663
	F4	,184	3	,	,999	3	,928
	F5	,208	3	,	,992	3	,829

a, Lilliefors Significance Correction

ANOVA

Fluks						
	Sum of Squares	df	Mean Square	F	Sig,	
Between Groups	101,941	4	25,485	1153,111	,000	
Within Groups	,221	10	,022			
Total	102,162	14				

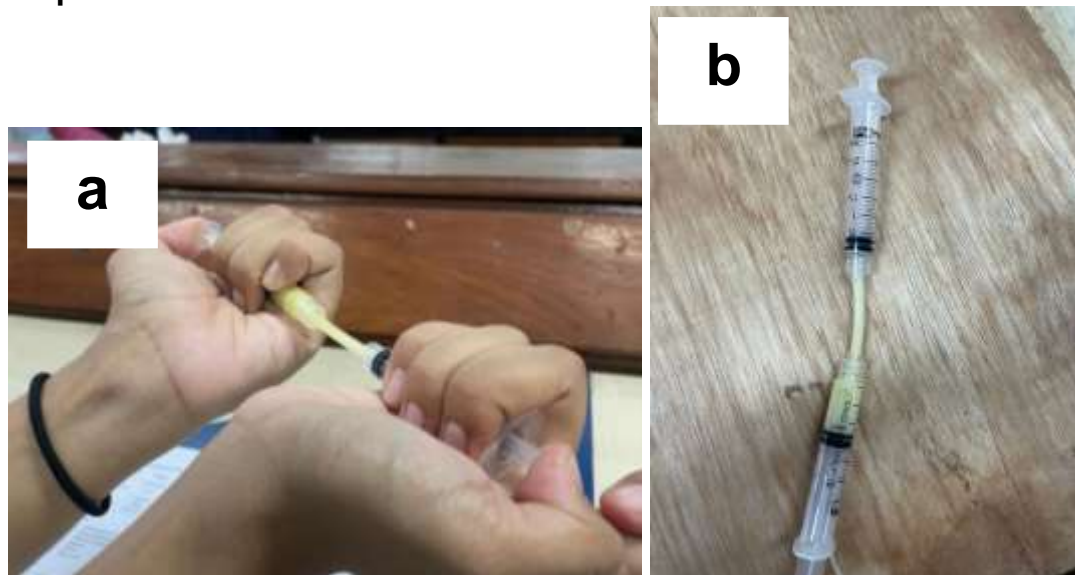
Multiple Comparisons

Dependent Variable: Fluks								
	(I) Form ula	(J) Form ula	Mean Difference (I- J)	Std, Error	Sig,	95% Confidence Interval Lower Bound	Upper Bound	
Tukey HSD	F1	F2	3,2630151 [*]	,121384 8	,000	2,863528	3,662502	
		F3	,7696631 [*]	,121384 8	,001	,370176	1,169150	
		F4	4,4898155 [*]	,121384 8	,000	4,090328	4,889303	
		F5	7,2223593 [*]	,121384 8	,000	6,822872	7,621847	
		F2	F1	-3,2630151 [*]	,121384 8	,000	-3,662502	-2,863528
	F2	F3	-2,4933520 [*]	,121384 8	,000	-2,892839	-2,093865	
		F4	1,2268004 [*]	,121384 8	,000	,827313	1,626288	
		F5	3,9593442 [*]	,121384 8	,000	3,559857	4,358832	
		F3	F1	-,7696631 [*]	,121384 8	,001	-1,169150	-,370176
		F2	2,4933520 [*]	,121384 8	,000	2,093865	2,892839	
	F3	F4	3,7201524 [*]	,121384 8	,000	3,320665	4,119640	
		F5	6,4526962 [*]	,121384 8	,000	6,053209	6,852184	
		F4	F1	-4,4898155 [*]	,121384 8	,000	-4,889303	-4,090328
		F2	-1,2268004 [*]	,121384 8	,000	-1,626288	-,827313	
		F3	-3,7201524 [*]	,121384 8	,000	-4,119640	-3,320665	
	F4	F5	2,7325438 [*]	,121384 8	,000	2,333056	3,132031	
		F1	-7,2223593 [*]	,121384 8	,000	-7,621847	-6,822872	
		F2	-3,9593442 [*]	,121384 8	,000	-4,358832	-3,559857	
		F3	-6,4526962 [*]	,121384 8	,000	-6,852184	-6,053209	
		F4	-2,7325438 [*]	,121384 8	,000	-3,132031	-2,333056	
Games - Howell	F1	F2	3,2630151 [*]	,165737 5	,001	2,424548	4,101482	
		F3	,7696631	,157901 5	,070	-,107663	1,646989	
		F4	4,4898155 [*]	,150419 7	,001	3,532881	5,446750	

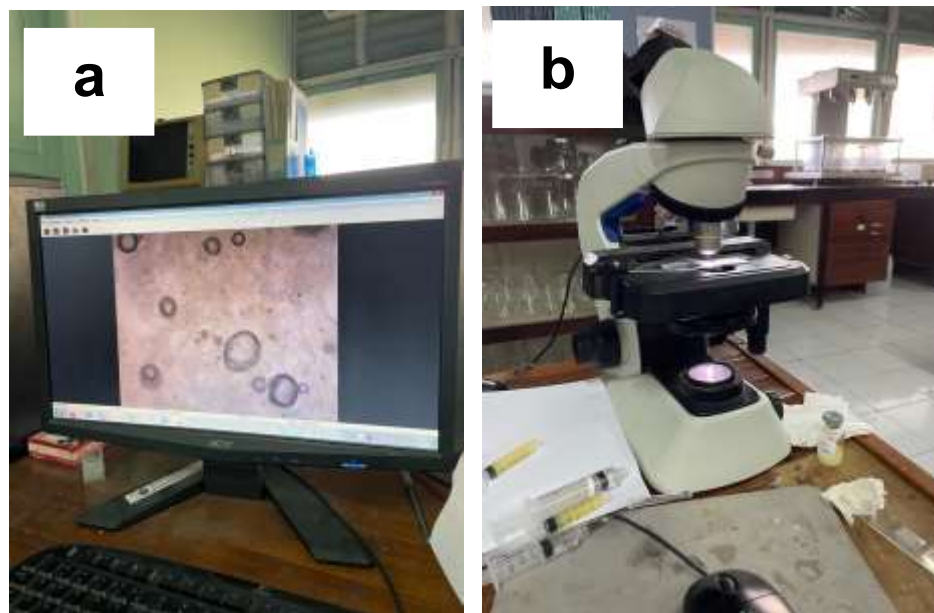
	F5	7,2223593*	,153006	,000	6,299260	8,145459
F2	F1	-3,2630151*	,165737	,001	-4,101482	-2,424548
	F3	-2,4933520*	,106456	,000	-2,979135	-2,007569
	F4	1,2268004*	,095006	,003	,735028	1,718573
	F5	3,9593442*	,099051	,000	3,477617	4,441071
F3	F1	-,7696631	,157901	,070	-1,646989	,107663
	F2	2,4933520*	,106456	,000	2,007569	2,979135
	F4	3,7201524*	,080561	,000	3,337510	4,102795
	F5	6,4526962*	,085294	,000	6,064764	6,840628
F4	F1	-4,4898155*	,150419	,001	-5,446750	-3,532881
	F2	-1,2268004*	,095006	,003	-1,718573	-,735028
	F3	-3,7201524*	,080561	,000	-4,102795	-3,337510
	F5	2,7325438*	,070485	,000	2,415093	3,049995
F5	F1	-7,2223593*	,153006	,000	-8,145459	-6,299260
	F2	-3,9593442*	,099051	,000	-4,441071	-3,477617
	F3	-6,4526962*	,085294	,000	-6,840628	-6,064764
	F4	-2,7325438*	,070485	,000	-3,049995	-2,415093

*, The mean difference is significant at the 0,05 level,

Lampiran 7. Dokumentasi Penelitian



Gambar 12. (a) Proses pencampuran formula. (b) Formula yang telah tercampur



Gambar 13. (a) Evaluasi ukuran mikropartikel. (b) Pengukuran mikropartikel di mikroskop



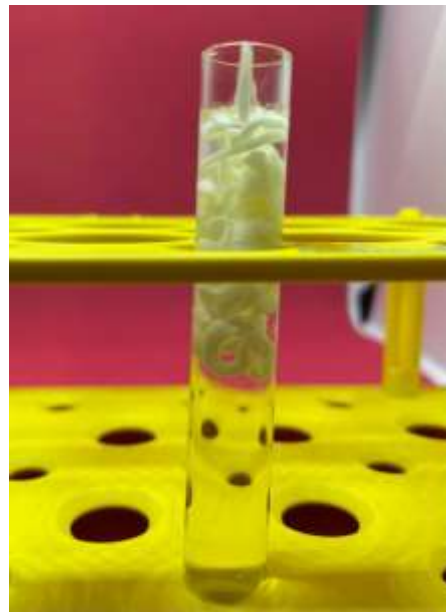
Gambar 14. Evaluasi Viskositas



Gambar 15. Spektrofotometer UV-Vis



Gambar 16. Uji Pelepasan



Gambar 17. Uji Pembentukan matriks *in vitro*