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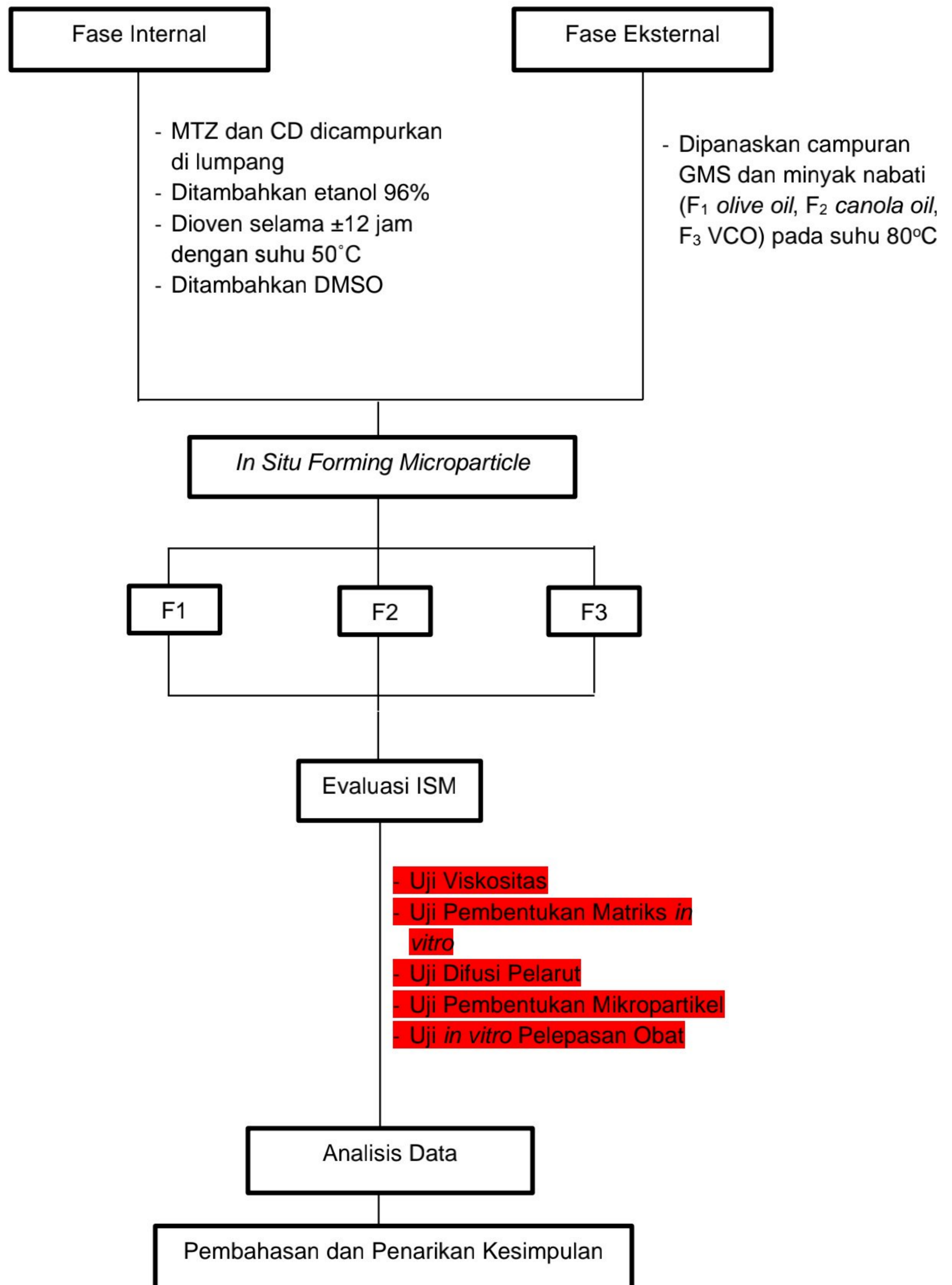
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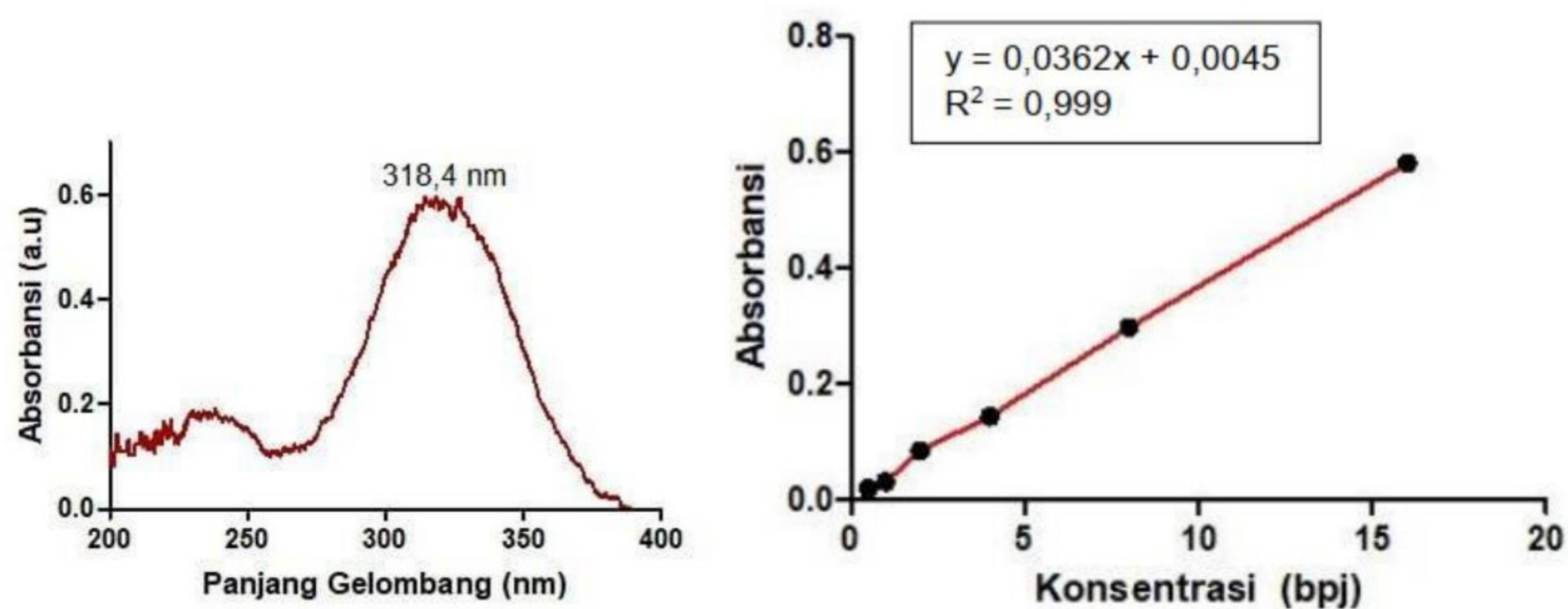
LAMPIRAN

Lampiran 1. Skema Kerja Penelitian



Lampiran 2. Panjang Gelombang Maksimum dan Kurva Baku

Lampiran 2.1 Panjang Gelombang Maksimum MTZ dan Kurva Kalibrasi



Gambar 12. (a) Panjang Gelombang Maksimum MTZ, (b) kurva baku pada metanol

Tabel 4. Data Kurva Baku MTZ dalam Metanol

Konsentrasi	Serapan			Rata-rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
0.5	0	0	0.022	0.007	0.012701706
1	0.033	0.032	0.033	0.033	0.00057735
2	0.072	0.08	0.086	0.079	0.007023769
4	0.139	0.147	0.146	0.144	0.004358899
8	0.302	0.307	0.299	0.303	0.004041452
16	0.591	0.593	0.582	0.494	0.005859465

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

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

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

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

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

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

Formulasi 2

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

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

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

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

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

Formulasi 3

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

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

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

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

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

Lampiran 3.2 Uji pelepasan obat

Persamaan : $y = 0,0362x + 0,0045$

Keterangan :

x = konsentrasi

y = absorbansi

Untuk F1 jam ke-1 replikasi pertama diperoleh absorbansi 0,081 dengan persamaan regresi $y = 0,0362x + 0,0045$ dan faktor dilusi = 20

$$x = (0,081 - 0,0045) / 0,0362$$

$$x = (0,07655) / 0,0386$$

$$x = 1,981 \mu\text{g/mL}$$

Konsentrasi dalam 100 mL = $1,981 \mu\text{g/mL} \times 100 \text{ mL} \times 20 = 3.962 \text{ mg/mL}$

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

$$\text{Faktor koreksi} = \frac{3.962}{1000} + 0,016 = 3,978 \text{ mg/mL}$$

Jumlah obat yang terdisolusi = konsentrasi dalam 100 mL + Faktor koreksi

$$= 3.962 \text{ mg/mL} + 3,978 \text{ mg/ml}$$

$$= 3.965,98 \text{ mg/mL}$$

Lampiran 3.3 Perhitungan fluks

Untuk F1 jam ke-168 replikasi pertama, konsentrasi obat adalah $9,69 \mu\text{g/mL}$, faktor dilusi = 20, volume kompartemen = 100 mL, dan luas membran difusi adalah 7,5 ($p \times l = 3 \times 2,5 \text{ cm}$)

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

$$\text{Pelepasan} = \frac{9,69 \frac{\mu\text{g}}{\text{mL}} \times 20 \times 100 \text{ mL}}{7,5 \text{ cm}^2}$$

$$\text{Pelepasan} = 2.584 \mu\text{g}/\text{cm}^2$$

Untuk permeat kumulatif, dilakukan penjumlahan dari pelepasan dari jam-jam sebelumnya sehingga diperoleh nilai pelepasan kumulatif pada jam ke-

$$168 \text{ replikasi pertama} = 1.670,866 \mu\text{g}/\text{cm}^2$$

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

$$\text{Fluks} = \frac{1.670,866 \mu\text{g}/\text{cm}^2}{168 \text{ jam}}$$

$$\text{Fluks} = 9,988 \mu\text{g}/\text{cm}^2, \text{jam}$$

Lampiran 4. Tabel Hasil Evaluasi

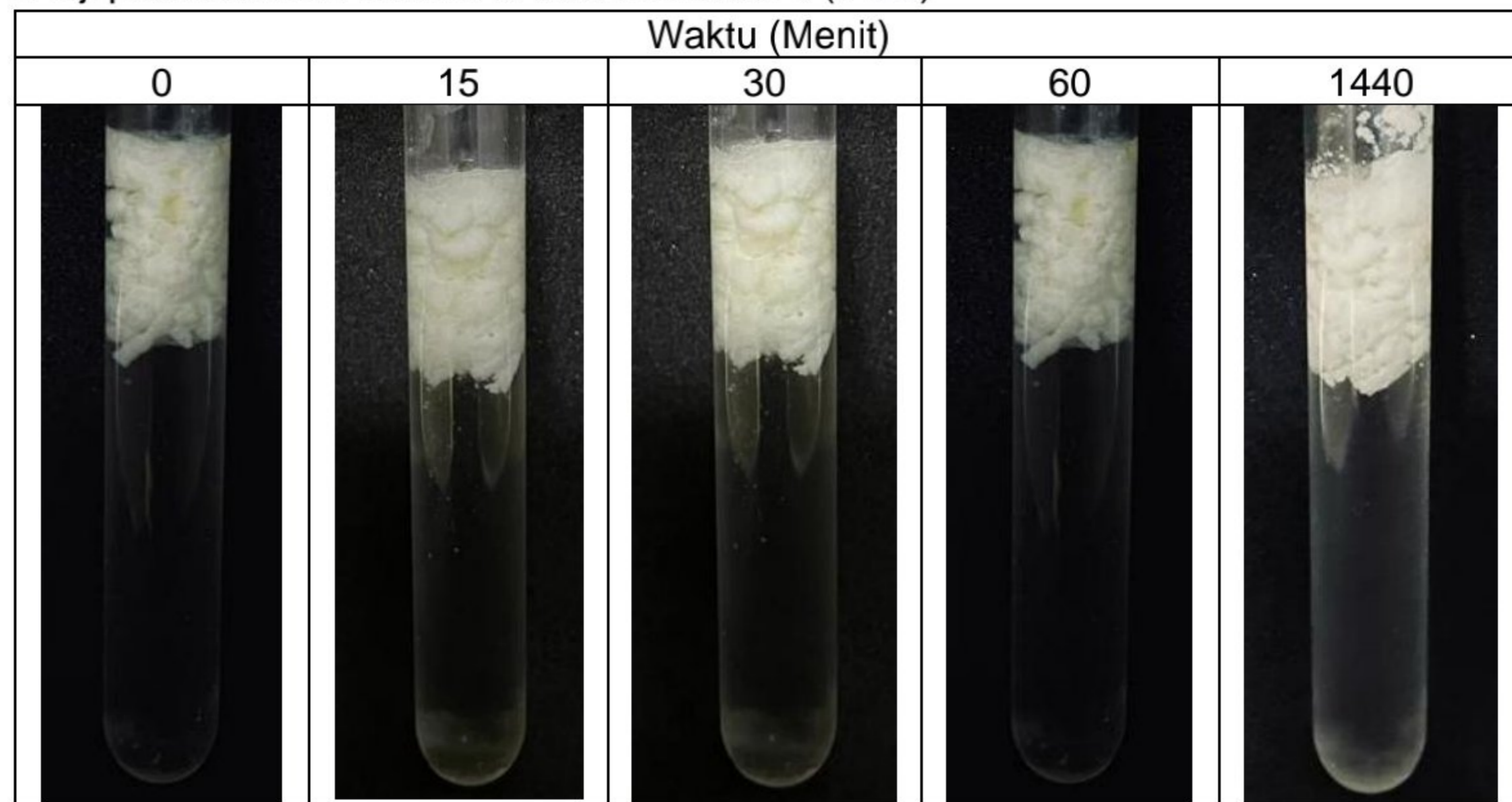
Lampiran 4.1 Tabel Uji Viskositas

Tabel 5. Data Uji Viskositas ISM MTZ

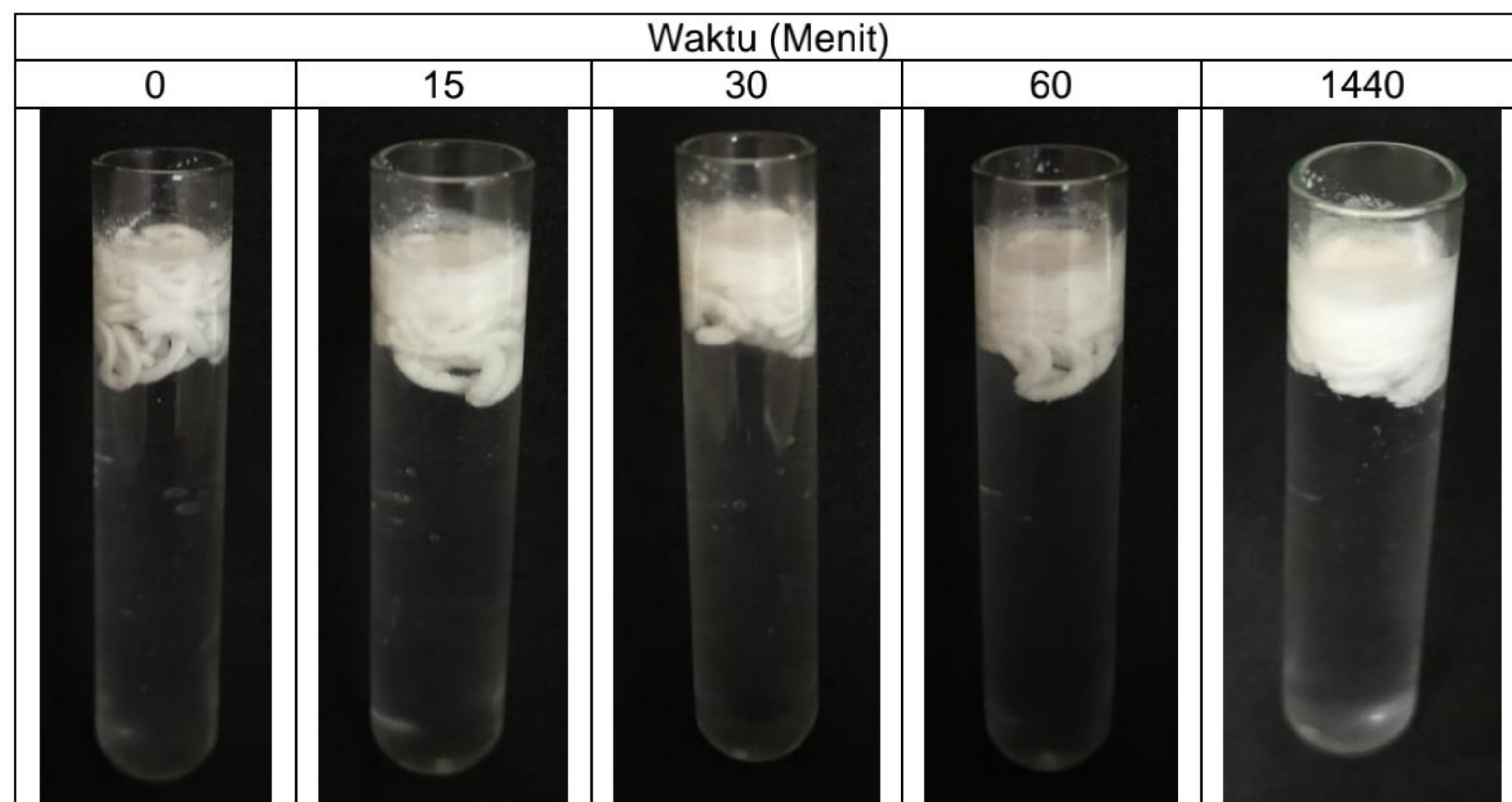
Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD
F1	14.400	14.400	14.000	14.267	0,29
F2	13.600	13200	14.000	13.600	0,5
F3	12.000	12.400	12.400	12.267	0,29

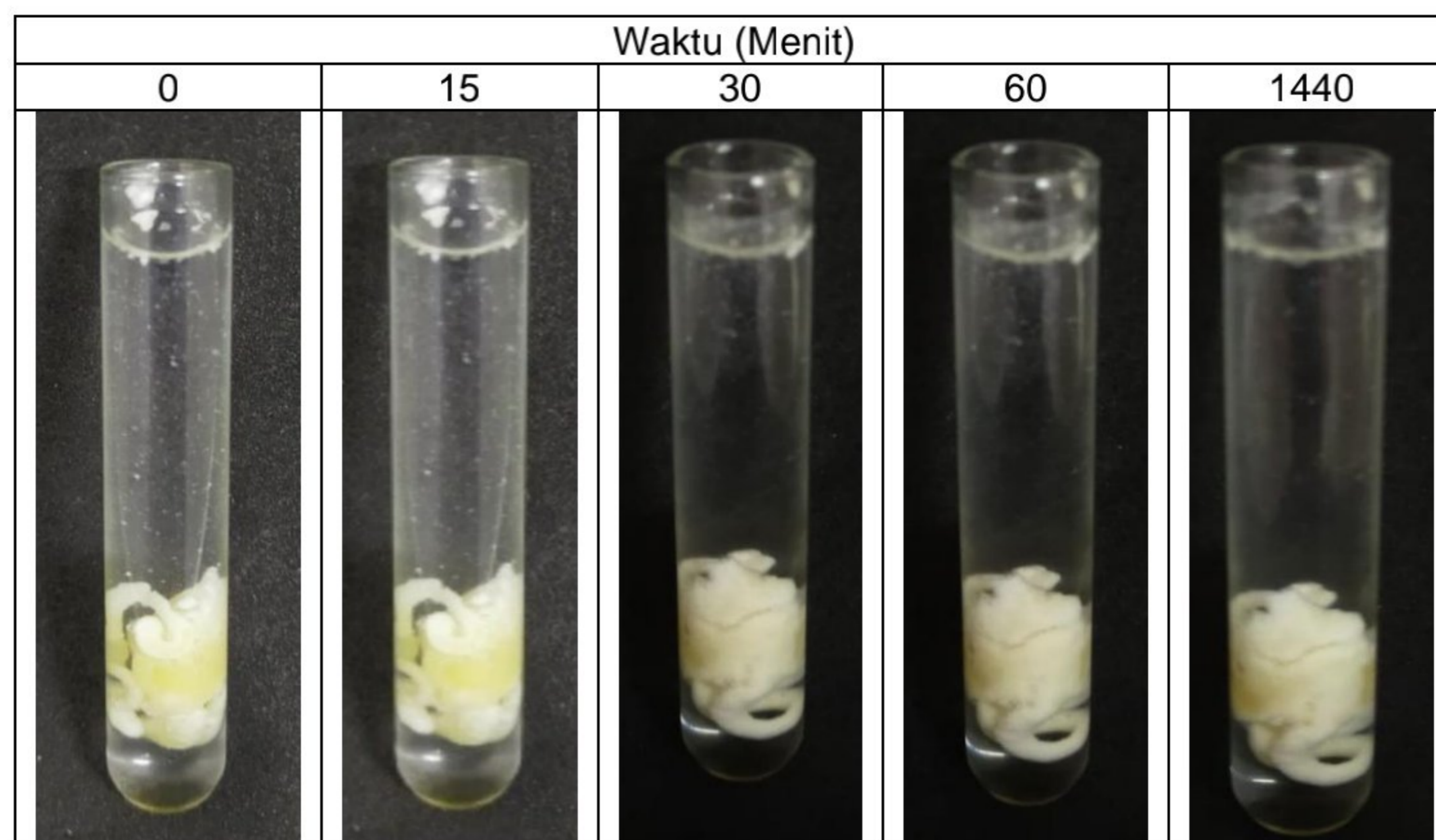
Lampiran 4.2 Tabel Uji Pembentukan Matriks *In Vitro* dari ISM

Tabel 6. Uji pembentukan matriks *in vitro* formulasi 1 (VCO)



Tabel 7. Uji Pembentukan Matriks *in vitro* Formulasi 2 (CO)



Tabel 8. Uji Pembentukan Matriks *in vitro* Formulasi 3 (OO)**Lampiran 4.3 Tabel Uji Ukuran Mikropartikel****Tabel 9.** Hasil uji studi ukuran mikropartikel formula 1 (VCO)

Formula	Sebelum	Rata-Rata	SD	Setelah 30m PBS	Rata-Rata	SD
F1	156.91	179.11	53.88	83.48	76.09	20.11
	137.74			78.05		
	152.79			64.95		
	160.53			87.84		
	184.54			81.70		
	152.53			84.10		
	146.19			74.45		
	206.62			70.46		
	166.74			75.37		
	184.54			118.69		
	158.83			96.83		
	164.42			69.12		
	161.11			90.07		
	247.19			66.47		
	129.09			63.92		
	133.49			98.81		
	168.21	56.70				

	214.80		114.43		
	176.92		78.22		
	224.84		77.04		
	231.44		107.30		
	119.35		57.91		
	207.44		76.27		
	194.30		55.30		
	219.05		68.29		
	148.90		70.82		
	181.81		82.99		
	152.71		113.19		
	164.14		43.94		
	205.62		62.15		
	229.58		52.80		
	251.66		82.51		
	174.10		108.44		
	205.88		69.43		
	236.49		113.91		
	154.60		80.18		
	189.34		73.64		
	173.43		102.32		
	188.83		73.60		
	190.22		66.93		
	194.61		47.08		
	171.01		40.26		
	191.50		89.18		
	151.07		65.97		
	177.55		78.44		
	196.91		70.40		
	143.20		46.93		
	229.10		86.07		
	238.53		62.85		
	118.14		57.51		
	90.49		64.05		
	194.82		50.72		
	244.86		59.56		
	212.06		138.04		
	278.82		110.06		
	158.89		78.30		
	153.48		78.59		
	200.46		64.49		

	292.57		85.77		
	99.88		101.03		
	141.68		61.41		
	181.96		80.39		
	227.69		98.48		
	125.19		74.31		
	159.34		76.67		
	217.89		48.10		
	161.06		49.77		
	147.78		89.04		
	125.06		121.28		
	122.51		62.56		
	222.94		87.98		
	106.97		69.10		
	203.41		78.71		
	248.98		53.13		
	197.51		97.78		
	200.36		76.09		
	216.87		95.48		
	359.49		76.68		
	308.84		139.42		
	182.77		92.89		
	141.18		87.38		
	165.53		65.70		
	221.03		84.25		
	294.99		70.51		
	153.37		62.60		
	127.68		71.95		
	124.53		60.74		
	101.99		54.08		
	210.15		84.90		
	48.88		58.83		
	60.61		58.82		
	139.65		51.18		
	136.89		51.33		
	146.89		47.30		
	324.45		75.56		
	82.53		57.91		
	102.89		56.71		
	110.75		65.00		
	181.83		73.30		

	191.61			73.64		
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Tabel 10. Hasil uji studi ukuran mikropartikel formula 2 (CO)

Formula	Sebelum	Rata-Rata	SD	Setelah 30m PBS	Rata-Rata	SD
F2	250.84	153.68	37.63	85.57	90.26	19.61
	246.06			79.65		
	128.84			85.86		
	152.12			90.73		
	145.19			88.22		
	139.49			102.07		
	208.44			90.28		
	124.20			86.78		
	131.40			109.26		
	240.78			123.40		
	164.35			113.89		
	221.00			101.39		
	228.23			115.87		
	160.20			102.75		
	164.30			96.60		
	167.11			110.84		
	205.66			94.76		
	165.28			72.34		
	153.47			75.47		
	161.07			92.89		
	128.66			59.85		
	178.03			75.22		
	162.31			86.12		
	186.92			84.82		
	154.56			80.37		
	158.36			113.45		
	170.50			64.55		
	129.05			115.58		
	152.71			70.53		
	168.28			99.90		
	125.16	85.85				
	127.11	93.62				
	154.45	80.26				
	150.74	71.90				
	156.85	60.24				

	148.70		92.29		
	145.01		82.49		
	96.28		80.38		
	151.79		84.16		
	192.25		112.59		
	205.89		105.11		
	202.37		88.42		
	217.32		88.41		
	120.85		116.74		
	196.62		94.18		
	133.01		99.12		
	139.31		94.76		
	124.97		118.29		
	233.37		94.44		
	190.97		106.73		
	167.44		72.37		
	150.66		87.12		
	115.42		66.88		
	101.02		139.92		
	127.32		89.26		
	111.48		84.60		
	93.95		121.36		
	213.19		56.83		
	135.53		82.86		
	115.01		124.27		
	188.70		64.99		
	80.16		73.00		
	99.73		90.57		
	159.22		66.16		
	118.37		77.87		
	142.00		73.71		
	127.09		101.27		
	109.66		106.68		
	128.78		74.71		
	98.18		66.88		
	136.19		82.15		
	192.25		65.00		
	92.43		75.12		
	168.32		81.59		
	176.17		58.14		
	148.54		54.08		

	131.55		81.89		
	145.00		71.70		
	179.97		82.07		
	129.60		97.07		
	125.87		56.83		
	135.17		46.64		
	147.23		78.82		
	127.69		103.63		
	155.33		98.29		
	162.24		93.37		
	143.79		97.25		
	164.33		107.96		
	223.94		97.62		
	187.99		82.49		
	88.20		73.60		
	117.92		126.73		
	101.69		82.49		
	144.67		123.99		
	114.78		128.58		
	218.21		92.72		
	140.20		119.03		
	126.13		147.90		
	159.60		91.14		
	140.11		87.44		

Tabel 11. Hasil uji studi ukuran mikropartikel formula 3 (OO)

Formula	Sebelum	Rata-Rata	SD	Setelah 30m PBS	Rata-Rata	SD	
F3	331.81	156.83	47.60	122.10	77.19	29.51	
	312.87						93.74
	243.63						97.49
	146.56						119.31
	128.80						151.02
	142.57						158.95
	112.91						77.87
	127.46						108.17
	164.68						108.17
	200.87						178.03

	310.79		76.95		
	250.15		54.23		
	158.42		59.85		
	133.45		86.23		
	106.37		87.55		
	134.91		55.20		
	139.04		83.07		
	153.15		71.09		
	156.54		89.17		
	153.74		113.90		
	161.08		115.26		
	200.37		109.57		
	128.29		83.25		
	107.97		145.15		
	144.54		127.14		
	198.27		113.41		
	136.95		131.05		
	155.98		79.75		
	124.78		73.28		
	144.16		100.93		
	110.69		101.69		
	139.97		99.71		
	121.48		55.99		
	160.38		83.07		
	219.15		66.88		
	238.96		90.97		
	168.82		75.93		
	198.79		83.69		
	217.58		77.13		
	178.38		95.36		
	183.83		53.79		
	164.65		109.50		
	171.98		65.95		
	185.10		98.65		
	176.48		91.91		
	144.79		90.49		
	164.49		50.84		
	265.78		39.16		
	146.11		47.74		
	108.47		121.74		
	129.67		84.41		

	130.26		60.61		
	105.13		87.98		
	166.36		70.41		
	166.18		29.07		
	163.22		52.06		
	193.08		37.97		
	126.39		60.24		
	158.59		70.43		
	174.32		45.65		
	148.60		47.62		
	149.32		47.62		
	104.82		90.72		
	156.55		25.72		
	81.03		29.91		
	123.33		52.47		
	152.55		53.19		
	121.55		50.87		
	155.68		55.06		
	119.63		71.17		
	161.79		89.70		
	157.39		50.08		
	200.24		60.24		
	117.53		72.13		
	163.73		42.88		
	165.74		59.11		
	122.07		92.89		
	127.52		63.84		
	129.84		47.33		
	112.06		93.46		
	201.40		40.82		
	122.06		52.64		
	84.62		48.37		
	124.17		74.93		
	238.43		49.85		
	104.31		78.52		
	107.20		74.45		
	222.61		44.11		
	187.74		69.78		
	144.73		50.83		
	161.66		50.84		
	109.30		88.54		

	137.40			56.03		
	86.07			54.08		
	129.13			73.78		
	95.90			90.02		
	79.62			32.36		
	135.60			49.03		
	188.31			84.23		
	161.08			90.13		

Lampiran 4.4 Tabel Uji Difusi Pelarut dari ISM

Tabel 12. Uji Difusi Pelarut ISM MTZ

Formula	5 menit			15 menit			30 menit		
	h (mm)	v (mm)	d (mm)	h (mm)	v (mm)	d (mm)	h (mm)	v (mm)	d (mm)
VCO	13,25	13,44	13,11	14,06	14,56	14,58	14,24	15,17	14,69
CO	13,39	14,62	14,23	14,27	13,68	14,3	14,46	14,68	14,34
OO	12,57	12,68	12,6	13,14	13,53	12,98	13,68	14,01	13,57

Formula	1 jam			2 jam			3 jam		
	h (mm)	v (mm)	d (mm)	h (mm)	v (mm)	d (mm)	h (mm)	v (mm)	d (mm)
VCO	14,68	15,26	14,91	14,75	15,32	14,97	17,02	17,92	16,92
CO	14,56	14,9	14,74	15,01	14,96	14,89	16,18	16,2	16,19
OO	13,75	14,29	13,63	14,99	14,77	14,97	16,89	16,65	15,88

Formula	4 jam			24 jam		
	h (mm)	v (mm)	d (mm)	h (mm)	v (mm)	d (mm)
VCO	17,45	17,79	17,55	33,83	31,22	30,25
CO	17,35	17,33	16,98	34,13	34,76	34,24
OO	18,8	17,28	17,36	36,51	35,83	34,84

Lampiran 4.5 Studi In Vitro Pelepasan Obat

Tabel 13. Data pelepasan formula 1 (VCO)

Waktu (jam)	Abs	Concentration (µg/ml)	permeated	Permeat kumulatif	Fluks (µg/cm ² .jam)	rata-rata	SD
0.25	0.05	1.37	18.23	18.23	0.11	0.12	0.01
	0.06	1.45	19.34	19.34	0.12		
	0.06	1.53	20.44	20.44	0.12		
0.50	0.06	1.64	21.92	40.15	0.24	0.25	0.02
	0.07	1.75	23.39	42.73	0.25		

	0.07	1.86	24.86	45.30	0.27		
1.00	0.08	2.11	28.18	68.32	0.41	0.42	0.02
	0.08	2.14	28.55	71.27	0.42		
	0.08	2.14	28.55	73.85	0.44		
2.00	0.09	2.44	32.60	100.92	0.60	0.62	0.02
	0.09	2.44	32.60	103.87	0.62		
	0.10	2.56	34.07	107.92	0.64		
3.00	0.11	2.80	37.38	138.31	0.82	0.84	0.02
	0.11	2.80	37.38	141.25	0.84		
	0.11	2.86	38.12	146.04	0.87		
4.00	0.12	3.22	42.91	181.22	1.08	1.11	0.03
	0.12	3.30	44.01	185.27	1.10		
	0.13	3.36	44.75	190.79	1.14		
5.00	0.16	3.63	48.39	229.60	1.37	1.39	0.03
	0.16	3.63	48.39	233.66	1.39		
	0.15	3.60	48.05	238.84	1.42		
6.00	0.17	3.94	52.48	282.09	1.68	1.70	0.02
	0.17	3.94	52.48	286.14	1.70		
	0.16	3.76	50.09	288.93	1.72		
12.00	0.20	4.78	63.73	345.82	2.06	2.08	0.02
	0.20	4.86	64.76	350.89	2.09		
	0.20	4.86	64.76	353.69	2.11		
24.00	0.21	5.14	68.51	414.33	2.47	2.49	0.02
	0.21	5.09	67.83	418.72	2.49		
	0.21	5.04	67.14	420.83	2.50		
36.00	0.22	5.34	71.24	485.56	2.89	2.92	0.02
	0.22	5.39	71.92	490.64	2.92		
	0.23	5.42	72.26	493.09	2.94		
48.00	0.24	5.80	77.37	562.94	3.35	3.38	0.03
	0.24	5.85	78.06	568.69	3.39		
	0.24	5.91	78.74	571.83	3.40		
60.00	0.27	6.49	86.58	649.52	3.87	3.89	0.02
	0.27	6.44	85.90	654.59	3.90		
	0.26	6.39	85.22	657.05	3.91		
72.00	0.28	6.83	91.01	740.53	4.41	4.44	0.03
	0.28	6.88	91.70	746.29	4.44		
	0.28	6.88	91.70	748.75	4.46		
84.00	0.30	7.34	97.83	838.37	4.99	5.02	0.03
	0.30	7.36	98.18	844.47	5.03		
	0.30	7.36	98.18	846.92	5.04		
96.00	0.32	7.77	103.63	942.00	5.61	5.64	0.03
	0.32	7.77	103.63	948.10	5.64		
	0.32	7.80	103.97	950.89	5.66		
108.00	0.33	8.16	108.75	1050.75	6.25	6.29	0.03
	0.33	8.21	109.43	1057.53	6.29		
	0.33	8.21	109.43	1060.32	6.31		
120.00	0.37	9.00	120.00	1170.75	6.97	7.00	0.03
	0.36	8.97	119.66	1177.19	7.01		

	0.37	9.03	120.34	1180.66	7.03		
132.00	0.37	9.13	121.71	1292.45	7.69	7.73	0.03
	0.37	9.15	122.05	1299.23	7.73		
	0.37	9.15	122.05	1302.71	7.75		
144.00	0.38	9.31	124.09	1416.54	8.43	8.46	0.03
	0.38	9.28	123.75	1422.98	8.47		
	0.38	9.31	124.09	1426.80	8.49		
156.00	0.38	9.38	125.12	1541.66	9.18	9.21	0.03
	0.38	9.41	125.46	1548.44	9.22		
	0.38	9.43	125.80	1552.60	9.24		
168.00	0.39	9.69	129.21	1670.87	9.95	9.98	0.03
	0.39	9.72	129.55	1677.99	9.99		
	0.39	9.72	129.55	1682.15	10.01		

Tabel 14. Hasil Uji Kinetika Pelepasan Obat Formula 1 Kinetika model *Korsmeyer-Peppas*

Goodness of Fit	
Parameter	No.1
N_observed	22
DF	20
R_obs-pre	0.9917
Rsqr	0.9832
Rsqr_adj	0.9823
MSE	2.4709
MSE_root	1.5719
Weighting	1
SS	49.4184
WSS	49.4184
AIC	89.8071
MSC	3.9026

Tabel 15. Data Pelepasan Formula 2 (CO)

Waktu (jam)	Abs	Concentration (µg/ml)	permeated	Permeat kumulatif	Fluks (µg/cm ² .jam)	rata-rata	SD
0.25	0.05	1.34	17.86	17.86	0.11	0.11	0.00
	0.06	1.40	18.60	18.60	0.11		
	0.06	1.45	19.34	19.34	0.12		
0.50	0.09	2.39	31.86	49.72	0.30	0.30	0.01
	0.09	2.44	32.60	51.20	0.30		
	0.10	2.50	33.33	52.67	0.31		
1.00	0.10	2.69	35.91	85.64	0.51	0.52	0.01
	0.10	2.72	36.28	87.48	0.52		
	0.10	2.67	35.54	88.21	0.53		
2.00	0.10	2.64	35.17	120.81	0.72	0.73	0.01
	0.10	2.64	35.17	122.65	0.73		
	0.10	2.67	35.54	123.76	0.74		
3.00	0.10	2.67	35.54	156.35	0.93	0.94	0.01

	0.10	2.72	36.28	158.93	0.95		
	0.11	2.78	37.02	160.77	0.96		
4.00	0.11	2.83	37.75	194.11	1.16	1.17	0.02
	0.11	2.89	38.49	197.42	1.18		
	0.11	2.97	39.59	200.37	1.19		
5.00	0.13	2.94	39.18	233.29	1.39	1.41	0.02
	0.13	3.07	40.89	238.31	1.42		
	0.13	3.07	40.89	241.25	1.44		
6.00	0.14	3.17	42.25	275.54	1.64	1.67	0.03
	0.14	3.22	42.93	281.24	1.67		
	0.14	3.35	44.64	285.89	1.70		
12.00	0.14	3.35	44.64	320.18	1.91	1.94	0.03
	0.15	3.37	44.98	326.22	1.94		
	0.15	3.45	46.00	331.89	1.98		
24.00	0.17	4.09	54.53	374.70	2.23	2.27	0.04
	0.18	4.14	55.21	381.43	2.27		
	0.18	4.17	55.55	387.44	2.31		
36.00	0.18	4.19	55.89	430.59	2.56	2.61	0.04
	0.18	4.24	56.57	438.00	2.61		
	0.18	4.29	57.25	444.70	2.65		
48.00	0.18	4.29	57.25	487.85	2.90	2.95	0.05
	0.18	4.32	57.60	495.60	2.95		
	0.18	4.37	58.28	502.98	2.99		
60.00	0.18	4.37	58.28	546.13	3.25	3.30	0.05
	0.18	4.37	58.28	553.88	3.30		
	0.19	4.40	58.62	561.60	3.34		
72.00	0.19	4.40	58.62	604.75	3.60	3.65	0.05
	0.19	4.45	59.30	613.18	3.65		
	0.19	4.47	59.64	621.24	3.70		
84.00	0.19	4.52	60.32	665.07	3.96	4.01	0.05
	0.19	4.52	60.32	673.50	4.01		
	0.19	4.52	60.32	681.56	4.06		
96.00	0.19	4.55	60.66	725.74	4.32	4.37	0.05
	0.19	4.60	61.35	734.85	4.37		
	0.20	4.65	62.03	743.59	4.43		
108.00	0.20	4.65	62.03	787.76	4.69	4.74	0.05
	0.20	4.65	62.03	796.88	4.74		
	0.20	4.65	62.03	805.62	4.80		
120.00	0.20	4.65	62.03	849.79	5.06	5.12	0.06
	0.20	4.73	63.05	859.93	5.12		
	0.20	4.81	64.08	869.69	5.18		
132.00	0.21	4.91	65.44	915.23	5.45	5.52	0.07
	0.21	5.04	67.14	927.07	5.52		
	0.21	5.11	68.17	937.86	5.58		
144.00	0.22	5.29	70.55	985.79	5.87	5.94	0.07
	0.22	5.32	70.90	997.97	5.94		
	0.22	5.32	70.90	1008.76	6.00		
156.00	0.25	5.93	79.08	1064.87	6.34	6.41	0.07

	0.25	6.06	80.78	1078.75	6.42		
	0.25	6.06	80.78	1089.54	6.49		
168.00	0.27	6.49	86.58	1151.45	6.85	6.93	0.08
	0.27	6.49	86.58	1165.33	6.94		
	0.27	6.54	87.26	1176.80	7.00		

Tabel 16. Hasil Uji Kinetika Pelepasan Obat Formula 1 Kinetika model *Korsmeyer-Peppas*

Goodness of Fit	
Parameter	No.1
N_observed	22
DF	20
R_obs-pre	0.9593
Rsqr	0.9201
Rsqr_adj	0.9161
MSE	2.5432
MSE_root	1.5947
Weighting	1
SS	50.8645
WSS	50.8645
AIC	90.4417
MSC	2.3451

Tabel 17. Data *in vitro* formula 3 (OO)

Waktu (jam)	Abs	Concentration ($\mu\text{g/ml}$)	permeated	Permeat kumulatif	Fluks ($\mu\text{g/cm}^2\cdot\text{jam}$)	rata-rata	SD
0.25	0.10	2.72	36.28	36.28	0.22	0.22	0.00
	0.10	2.72	36.28	36.28	0.22		
	0.11	2.78	37.02	37.02	0.22		
0.50	0.11	2.78	37.02	73.30	0.44	0.44	0.00
	0.11	2.78	37.02	73.30	0.44		
	0.11	2.78	37.02	74.03	0.44		
1.00	0.11	2.86	38.12	111.42	0.66	0.67	0.01
	0.11	3.02	40.33	113.63	0.68		
	0.12	3.08	41.07	115.10	0.69		
2.00	0.13	3.44	45.86	157.27	0.94	0.95	0.01
	0.13	3.44	45.86	159.48	0.95		
	0.13	3.44	45.86	160.96	0.96		
3.00	0.13	3.44	45.86	203.13	1.21	1.22	0.01
	0.13	3.49	46.59	206.08	1.23		
	0.13	3.49	46.59	207.55	1.24		
4.00	0.14	3.74	49.91	253.04	1.51	1.52	0.02
	0.14	3.74	49.91	255.99	1.52		
	0.14	3.80	50.64	258.20	1.54		
5.00	0.14	3.30	43.96	296.99	1.77	1.78	0.02
	0.14	3.30	43.96	299.94	1.79		
	0.14	3.30	43.96	302.15	1.80		
6.00	0.14	3.35	44.64	341.63	2.03	2.05	0.02

	0.14	3.35	44.64	344.58	2.05		
	0.14	3.35	44.64	346.79	2.06		
12.00	0.15	3.45	46.00	387.63	2.31		
	0.15	3.45	46.00	390.58	2.32	2.32	0.02
	0.15	3.45	46.00	392.79	2.34		
24.00	0.15	3.45	46.00	433.64	2.58		
	0.15	3.48	46.34	436.92	2.60	2.60	0.02
	0.15	3.53	47.02	439.81	2.62		
36.00	0.15	3.55	47.37	481.00	2.86		
	0.15	3.58	47.71	484.63	2.88	2.88	0.02
	0.15	3.58	47.71	487.52	2.90		
48.00	0.16	3.81	50.78	531.78	3.17		
	0.16	3.86	51.46	536.09	3.19	3.19	0.02
	0.16	3.86	51.46	538.98	3.21		
60.00	0.16	3.86	51.46	583.23	3.47		
	0.16	3.86	51.46	587.55	3.50	3.50	0.02
	0.17	3.91	52.14	591.12	3.52		
72.00	0.17	4.01	53.50	636.74	3.79		
	0.17	4.12	54.87	642.41	3.82	3.82	0.03
	0.18	4.19	55.89	647.01	3.85		
84.00	0.20	4.70	62.71	699.45	4.16		
	0.20	4.75	63.39	705.81	4.20	4.20	0.03
	0.20	4.81	64.08	711.09	4.23		
96.00	0.20	4.81	64.08	763.52	4.54		
	0.20	4.86	64.76	770.56	4.59	4.59	0.04
	0.21	5.01	66.80	777.89	4.63		
108.00	0.21	5.14	68.51	832.03	4.95		
	0.24	5.73	76.35	846.91	5.04	5.03	0.07
	0.24	5.80	77.37	855.26	5.09		
120.00	0.24	5.80	77.37	909.41	5.41		
	0.28	6.70	89.31	936.22	5.57	5.54	0.11
	0.28	6.75	89.99	945.25	5.63		
132.00	0.28	6.75	89.99	999.40	5.95		
	0.29	7.08	94.42	1030.65	6.13	6.09	0.13
	0.29	7.08	94.42	1039.68	6.19		
144.00	0.29	7.08	94.42	1093.82	6.51		
	0.29	7.11	94.77	1125.41	6.70	6.65	0.13
	0.29	7.13	95.11	1134.79	6.75		
156.00	0.29	7.18	95.79	1189.61	7.08		
	0.30	7.36	98.18	1223.59	7.28	7.24	0.14
	0.30	7.44	99.20	1233.98	7.35		
168.00	0.33	8.00	106.70	1296.31	7.72		
	0.33	8.00	106.70	1330.29	7.92	7.87	0.14
	0.33	8.03	107.04	1341.03	7.98		

Tabel 18. Hasil Uji Kinetika Pelepasan Obat Formula 1 Kinetika model *Korsmeyer-Peppas*

Goodness of Fit	
Parameter	No.1
N_observed	22
DF	20
R_obs-pre	0.8534
Rsqr	0.7242
Rsqr_adj	0.7104
MSE	9.6816
MSE_root	3.1115
Weighting	1
SS	193.6317
WSS	193.6317
AIC	119.8511
MSC	1.1064

Tabel 19. Data fluks pelepasan *in vitro* pada jam ke-168

Formula	Waktu (jam)	Abs	Concentration ($\mu\text{g/ml}$)	permeated	Permeat kumulatif	Fluks ($\mu\text{g/cm}^2.\text{jam}$)	rata-rata	SD
F1	168.00	0.39	9.69	129.21	1670.87	9.95	9.99	0.03
		0.39	9.72	129.55	1677.99	9.99		
		0.39	9.72	129.55	1682.15	10.01		
F2	168.00	0.27	6.49	86.58	1151.45	6.85	6.93	0.08
		0.27	6.49	86.58	1165.33	6.94		
		0.27	6.54	87.26	1176.80	7.00		
F3	168.00	0.33	8.00	106.70	1296.31	7.72	7.87	0.14
		0.33	8.00	106.70	1330.29	7.92		
		0.33	8.03	107.04	1341.03	7.98		

Lampiran 5. Data Hasil Analisis Statistika

5.1 Data Viskositas

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	Df	Sig.
Viskositas	CO	.385	3	.	.750	3	.000
	VCO	.175	3	.	1.000	3	1.000
	OO	.385	3	.	.750	3	.000

a. Lilliefors Significance Correction

Pairwise Comparisons of Formula

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test		
			Statistic	Sig.	Adj. Sig. ^a
OO-VCO	3.167	2.208	1.434	.152	.455
OO-CO	5.833	2.208	2.642	.008	.025
VCO-CO	2.667	2.208	1.208	.227	.681

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

5.2 Data Mikropartikel

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Sebelum	F1	.051	100	.200*	.977	100	.084
	F2	.099	100	.018	.967	100	.013
	F3	.151	100	.000	.904	100	.000
Sesudah	F1	.098	100	.019	.954	100	.002
	F2	.069	100	.200*	.987	100	.430
	F3	.093	100	.032	.954	100	.002

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

a. Lilliefors Significance Correction

Test Statistics^a

Sesudah -
Sebelum

Z	-14.804 ^b
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

5.3 Data Difusi**Tests of Normality**

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Difusi	VCO	.283	3	.	.935	3	.506
	CO	.324	3	.	.876	3	.314
	OO	.216	3	.	.989	3	.796

a. Lilliefors Significance Correction

ANOVA

Difusi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.316	2	12.158	8.589	.017
Within Groups	8.493	6	1.416		
Total	32.810	8			

5.4 Data Uji Pelepasan

		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

ANOVA

Pelepasan					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	372.913	2	186.456	20147.959	.000
Within Groups	.056	6	.009		
Total	372.968	8			

5.5 Data Fluks

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Pelepasan	F1	.238	3	.	.976	3	.702
	F2	.189	3	.	.998	3	.908
	F3	.296	3	.	.919	3	.448

a. Lilliefors Significance Correction

ANOVA

Pelepasan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.547	2	.274	1740.671	.000
Within Groups	.001	6	.000		
Total	.548	8			

Multiple Comparisons

Dependent Variable: Pelepasan

Tukey HSD

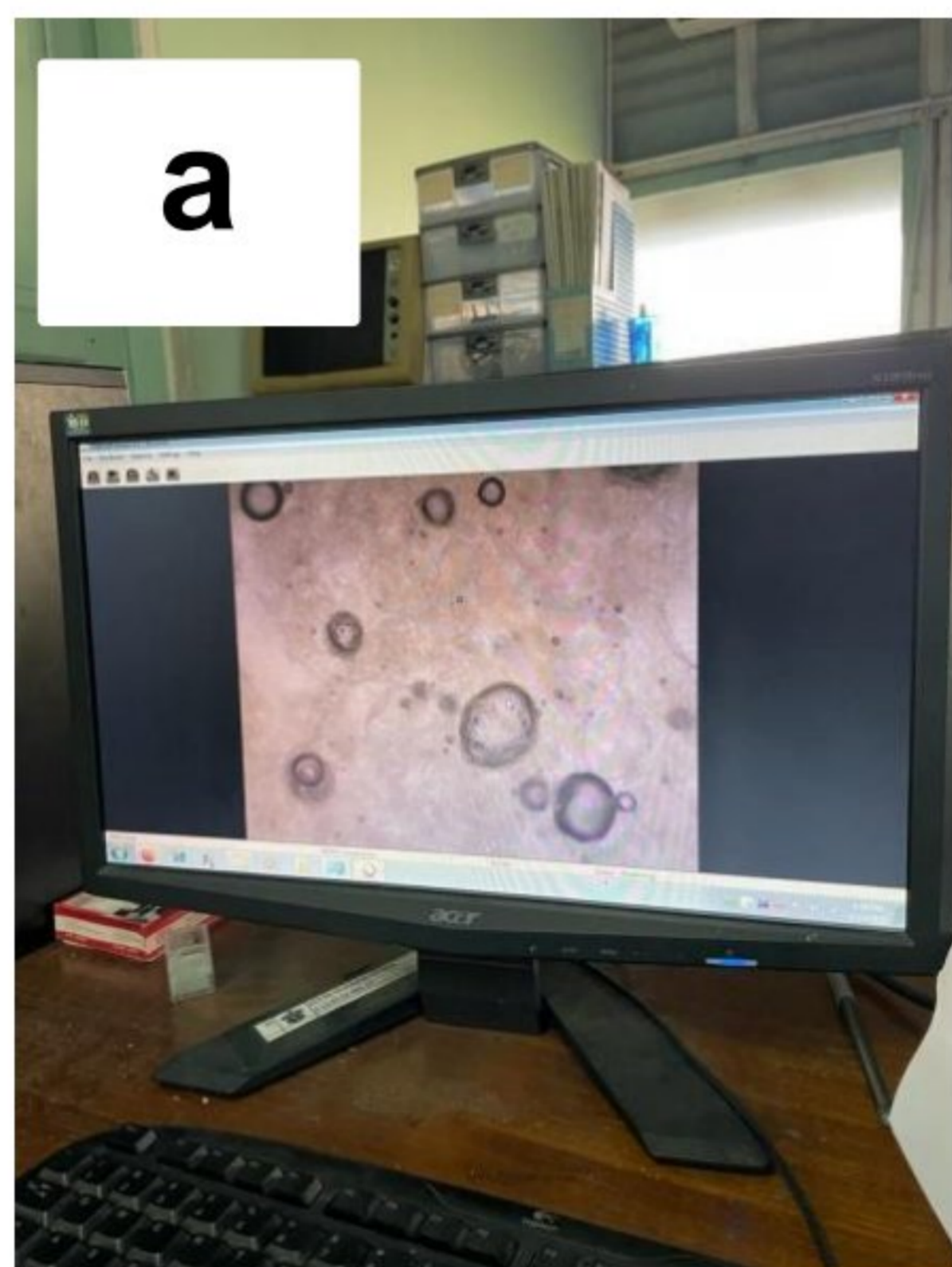
(I) Formula	(J) Formula	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
		(I-J)			Lower Bound	Upper Bound
F1	F2	.471666667*	.010237911	.000	.44025395	.50307939
	F3	.562666667*	.010237911	.000	.53125395	.59407939
F2	F1	-.471666667*	.010237911	.000	-.50307939	-.44025395
	F3	.091000000*	.010237911	.000	.05958728	.12241272
F3	F1	-.562666667*	.010237911	.000	-.59407939	-.53125395
	F2	-.091000000*	.010237911	.000	-.12241272	-.05958728

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

Lampiran 6. Dokumentasi Penelitian



Gambar 13. Formula ISM MTZ



Gambar 14. (a) Evaluasi ukuran mikropartikel (b) Pengukuran mikropartikel di mikroskop



Gambar 15. Evaluasi Viskositas



Gambar 16. Spektrofotometer UV-Vis



Gambar 17. Uji Pelepasan



Gambar 18. Uji Pembentukan matriks *in vitro*