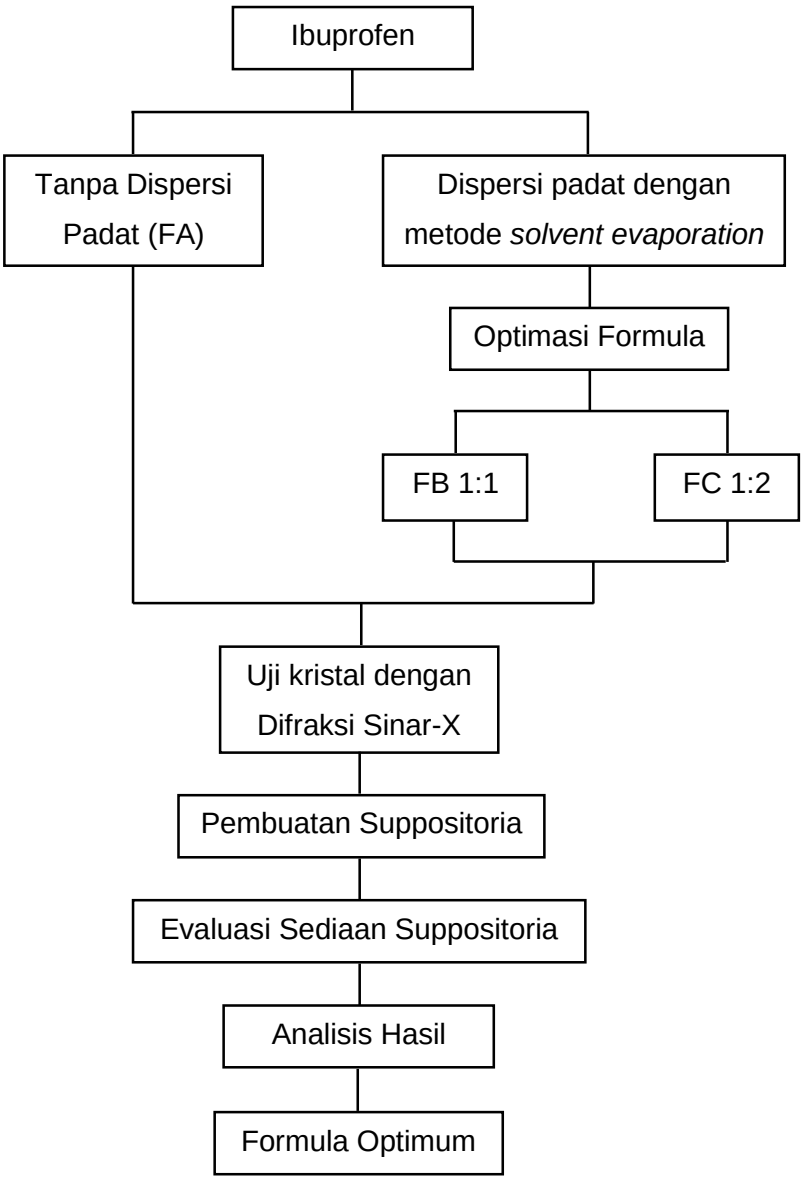
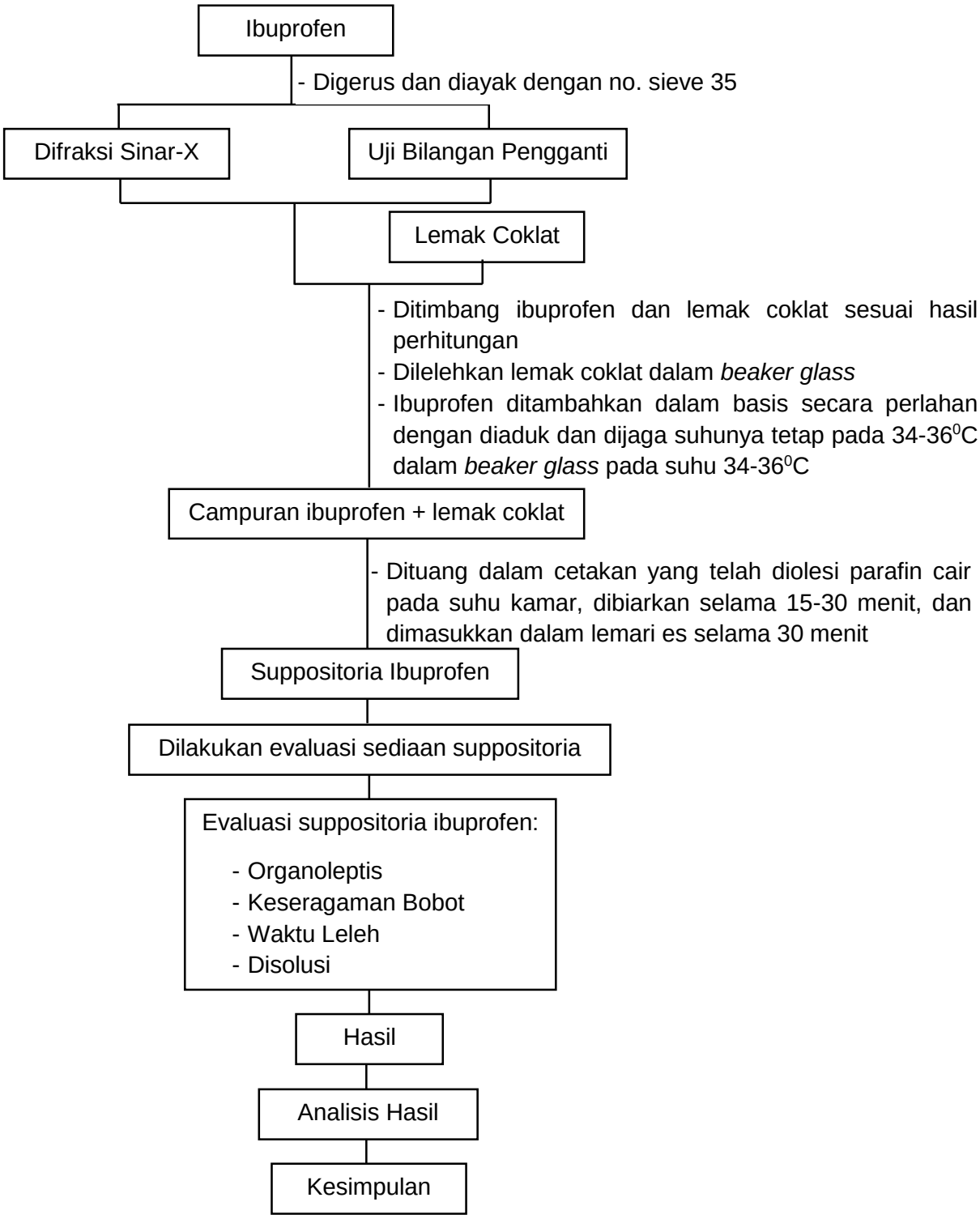
LAMPIRAN

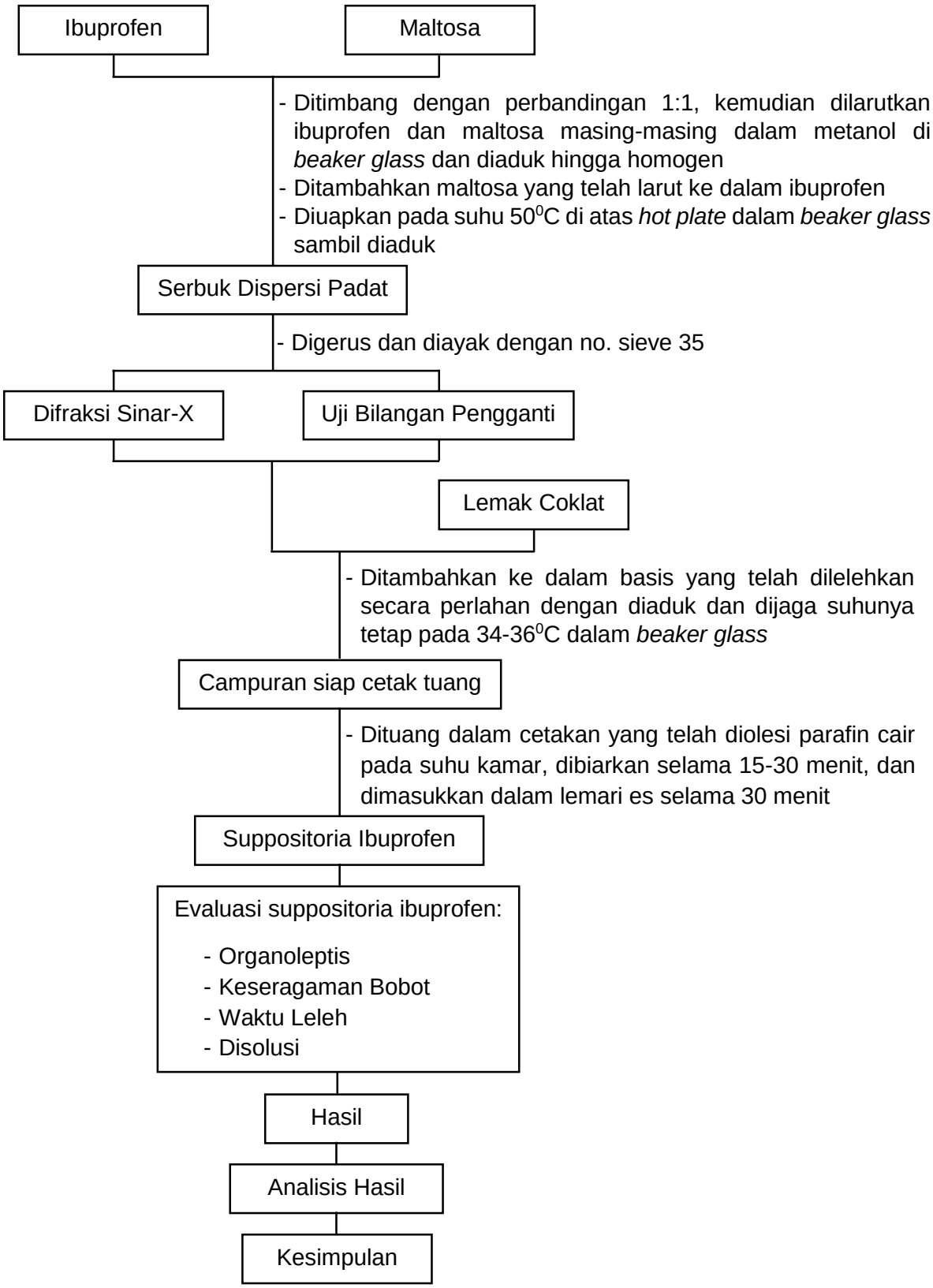
Lampiran 1. Skema Kerja



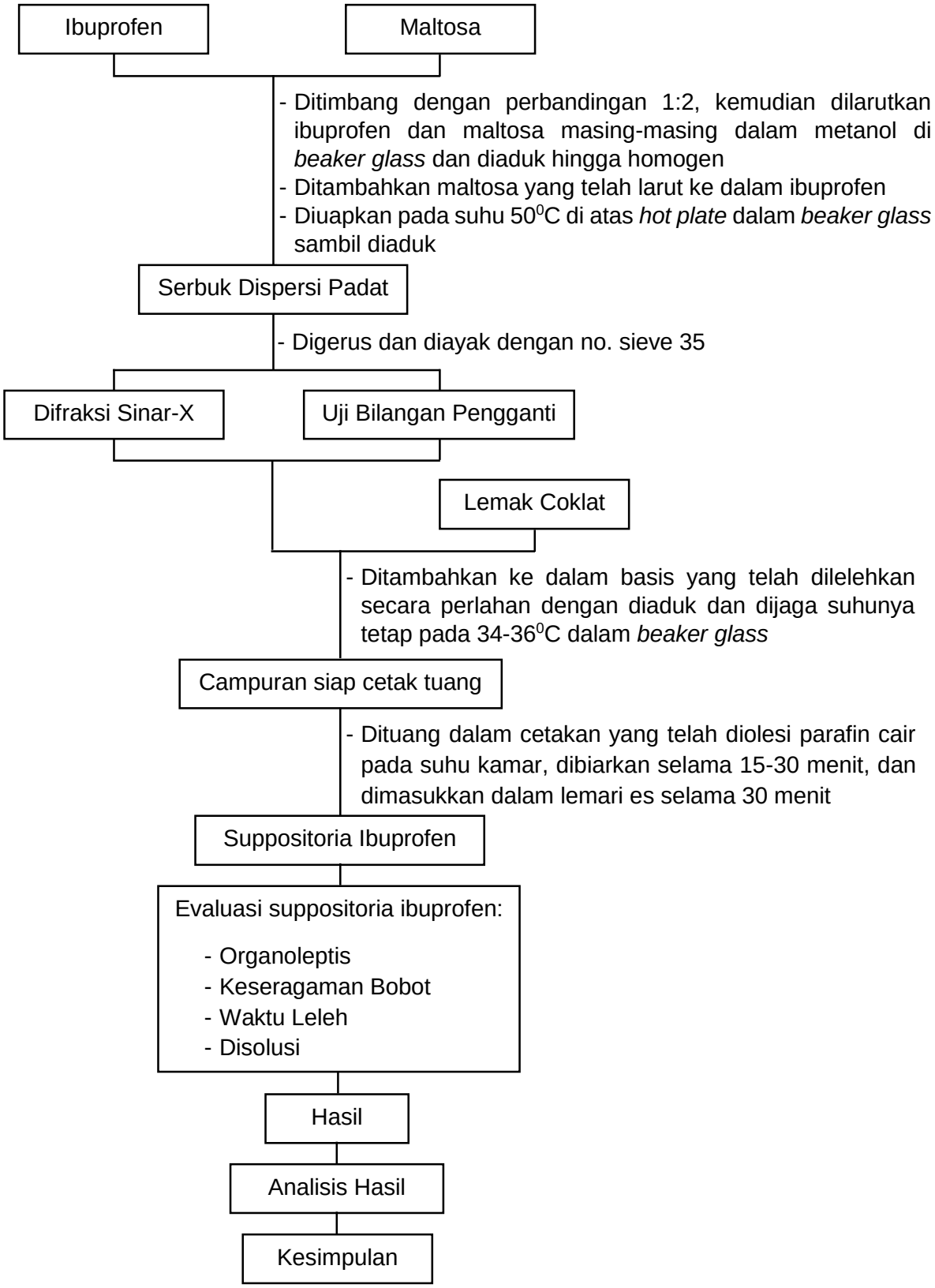
Bagan 1. Kerangka Alur Kerja Optimasi Suppositoria Ibuprofen



Bagan 2. Kerangka Alur Kerja Pembuatan Suppositoria Ibuprofen Murni (FA)

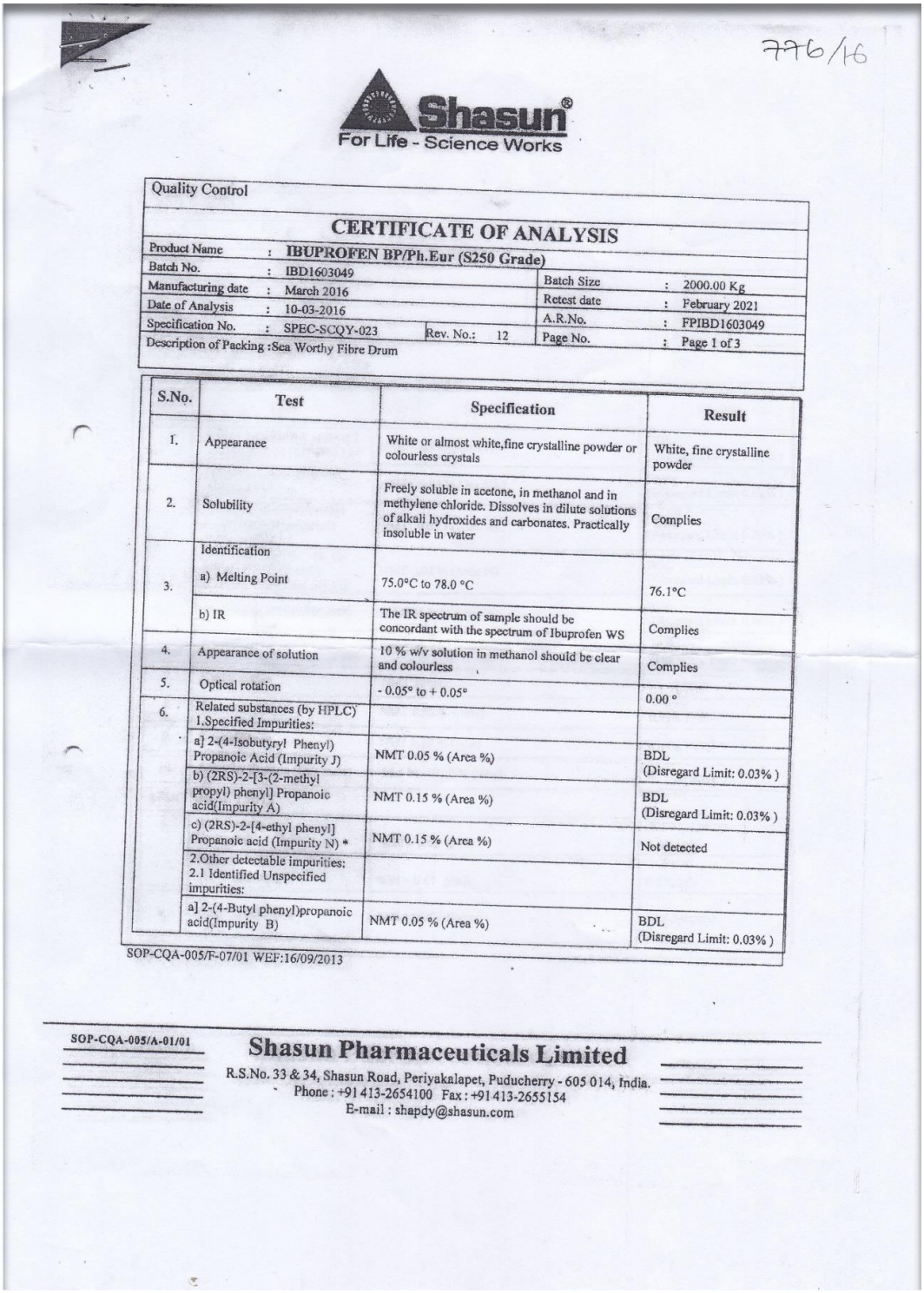


Bagan 3. Kerangka Alur Kerja Suppositoria Dispersi Padat Ibuprofen dengan Metode Solvent Evaporation (FB)



Bagan 4. Kerangka Alur Kerja Suppositoria Dispersi Padat Ibuprofen dengan Metode Solvent Evaporation (FC)

Lampiran 2. Certificate of Analysis Ibuprofen



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Quality Control

CERTIFICATE OF ANALYSIS

Product Name	:	IBUPROFEN BP/Ph.Eur (S250 Grade)			
Batch No.	:	IBD1603049		Batch Size	: 2000.00 Kg
Manufacturing date	:	March 2016		Retest date	: February 2021
Date of Analysis	:	10-03-2016		A.R.No.	: FPIBD1603049
Specification No.	:	SPEC-SCQY-023	Rev. No.: 12	Page No.	: Page 1 of 3
Description of Packing : Sea Worthy Fibre Drum					

S.No.	Test	Specification	Result
1.	Appearance	White or almost white, fine crystalline powder or colourless crystals	White, fine crystalline powder
2.	Solubility	Freely soluble in acetone, in methanol and in methylene chloride. Dissolves in dilute solutions of alkali hydroxides and carbonates. Practically insoluble in water	Complies
3.	Identification a) Melting Point	75.0°C to 78.0 °C	76.1°C
	b) IR	The IR spectrum of sample should be concordant with the spectrum of Ibuprofen WS	Complies
4.	Appearance of solution	10 % w/v solution in methanol should be clear and colourless	Complies
5.	Optical rotation	- 0.05° to + 0.05°	0.00 °
6.	Related substances (by HPLC) 1.Specified Impurities:		
	a] 2-(4-Isobutyryl Phenyl) Propanoic Acid (Impurity J)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	b) (2RS)-2-[3-(2-methyl propyl) phenyl] Propanoic acid(Impurity A)	NMT 0.15 % (Area %)	BDL (Disregard Limit: 0.03%)
	c) (2RS)-2-[4-ethyl phenyl] Propanoic acid (Impurity N) *	NMT 0.15 % (Area %)	Not detected
	2.Other detectable impurities: 2.1 Identified Unspecified impurities:		
	a] 2-(4-Butyl phenyl)propanoic acid(Impurity B)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)

SOP-CQA-005/F-07/01 WEF:16/09/2013

SOP-CQA-005/A-01/01

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Quality Control

CERTIFICATE OF ANALYSIS

Product Name	:	IBUPROFEN BP/Ph.Eur (S250 Grade)			
Batch No.	:	IBD1603049		Batch Size	: 2000.00 Kg
Manufacturing date	:	March 2016		Retest date	: February 2021
Date of Analysis	:	10-03-2016		A.R.No.	: FPIBD1603049
Specification No.	:	SPEC-SCQY-023	Rev. No.: 12	Page No.	: Page 2 of 3

Description of Packing :Sea Worthy Fibre Drum

S.No.	Test	Specification	Result
	b)(2RS)-2-[4-methyl phenyl] propanoic acid (Impurity D)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	c]4-Isobutylacetophenone (Impurity E)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	d)2-[4-(1-hydroxy-2-methyl propyl) -phenyl]propanoic acid(Impurity L)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	e)(2RS)-2-hydroxy-2-[4- (2-methyl propyl)-phenyl] propanoic acid (Impurity M)	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	2.2 Any unspecified impurity	NMT 0.05 % (Area %)	BDL (Disregard Limit: 0.03%)
	3.Total impurities	NMT 0.20% (Area %)	BDL (Disregard Limit: 0.03%)
7.	Heavy metals	NMT 10 ppm	LT 10 ppm
8.	Loss on drying	NMT 0.50 % (w/w)	0.11% (w/w)
9.	Sulphated ash	NMT 0.10 % (w/w)	0.05% (w/w)
10.	Assay by titration (Dry basis)	98.5 % -101.0 % (w/w)	99.7% (w/w)
ADDITIONAL TESTS			
a.	Bulk Density Un tapped	0.20 – 0.40 g/mL	0.33g/mL
	Tapped (1250 tappings)	0.35 – 0.67 g/mL	0.52g/mL
b.	Mean Particle Size	20.0 – 35.0 Microns	23.4 Microns

SOP-CQA-005/F-07/01 WEF:16/09/2013

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Quality Control

CERTIFICATE OF ANALYSIS

Product Name	:	IBUPROFEN BP/Ph.Eur (S250 Grade)			
Batch No.	:	IBD1603049		Batch Size	: 2000.00 Kg
Manufacturing date	:	March 2016		Retest date	: February 2021
Date of Analysis	:	10-03-2016		A.R.No.	: FPIBD1603049
Specification No.	:	SPEC-SCQY-023	Rev. No.: 12	Page No.	: Page 3 of 3

Description of Packing :Sea Worthy Fibre Drum

S.No.	Test	Specification	Result
c.	Residual solvents		
	i) Acetone	NMT 100 ppm	2 ppm
	ii) Isopropyl alcohol	NMT 250 ppm	BLD (LOD= 1.04 ppm)
	iii) Hexanes	NMT 290 ppm	38 ppm
	iv) Tri chloro ethylene	NMT 80 ppm	BLD (LOD= 1.27 ppm)
	v) Methanol φ	NMT 500 ppm	Not Detected

* Impurity N is irrelevant to the process employed. The test included to comply with EP monograph.

φ Not used in the process, test included for compliance with certificate of suitability.

Note:NMT = Not more than LT = Less than BDL = Below Disregard Limit BLD = Below Limit of Detection LOD = Limit of Detection

Remark: The material conforms to the specification.

	Prepared by	Reviewed by	Approved by
Signature			
Date	14/03/2016	14/03/2016	14/03/2016

CEP Number:R1-CEP1996-061-Rev10

SOP-CQA-005/F-07/01 WEF:16/09/2013

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Lampiran 3. Hasil Uji Identifikasi Bahan

a. Uji Identifikasi Ibuprofen (Sesuai dengan CoA)

Identifikasi	Spesifikasi berdasarkan CoA	Hasil
Organoleptis	Warna : Putih Bau : Tidak Berbau Bentuk : Serbuk Kristal	Warna : Putih Bau : Tidak Berbau Bentuk : Serbuk Kristal
Kelarutan	Mudah larut dalam aseton, metanol, metilen klorida. Praktis tidak larut dalam air.	200,3 mg ibuprofen larut dalam 20 ml metanol.
Titik Leleh	75-78^{0}C	
Panjang Gelombang Maksimum	222 nm (Maru *et al.*, 2015)	Diperoleh panjang gelombang Ibuprofen sebesar 224,4 nm.

b. Uji Identifikasi Maltosa

Identifikasi	Spesifikasi berdasarkan CoA	Hasil
Organoleptis	Warna : Putih Bau : Tidak Berbau Bentuk : Serbuk Kristal	Warna : Putih Bau : Tidak Berbau Bentuk : Serbuk Kristal
Kelarutan	Sangat larut dalam air, namun sangat sedikit larut dalam etanol (95%) dingin dan praktis tidak larut dalam eter (Rowe *et al*., 2009).	10,1 mg maltosa larut dalam 2 ml air.
Titik Leleh	120-125^{0}C (Rowe *et al.*, 2009).	100,2 mg meleleh pada suhu 125^{0}C.

c. Uji Identifikasi Lemak Coklat

Identifikasi	Spesifikasi berdasarkan CoA	Hasil
Organoleptis	Warna : Putih Kekuningan Bau : Seperti Coklat Bentuk : Padat	Warna : Putih Kekuningan Bau : Seperti Coklat Bentuk : Padat
Titik Leleh	31 – 34^{0}C.	150 mg leleh pada suhu 35^{0}C.

Lampiran 4. Hasil Uji Bilangan Pengganti Suppositoria Ibuprofen

Formula	Bobot Suppositoria (gram)		
	Bets 1	**Bets 2**	**Bets 3**
Basis	2,6873	2,6977	2,6869
	2,6950	2,6883	2,6935
	2,6707	2,6991	2,6951
	2,6855	2,6925	2,6777
	2,6622	2,6601	2,6911
	2,6751	2,6589	2,6614
Jumlah	**16,0758**	**16,0966**	**16,1057**
FA	2,6917	2,6714	2,6053
	2,6609	2,6440	2,6331
	2,6863	2,6260	2,6293
	2,6749	2,6639	2,6036
	2,6656	2,6149	2,6327
	2,6731	2,6708	2,6280
Jumlah	**16,0525**	**15,8910**	**15,7320**
FB	2,6766	2,7870	2,7843
	2,7861	2,7760	2,7501
	2,7870	2,7600	2,7600
	2,8084	2,8008	2,7708
	2,7876	2,7848	2,7773
	2,7039	2,7894	2,7570
Jumlah	**16,5496**	**16,6980**	**16,5995**
FC	2,8288	2,8215	2,8545
	2,8320	2,8583	2,8598
	2,8267	2,8301	2,8604
	2,8207	2,8253	2,8571
	2,8375	2,8285	2,8086
	2,8226	2,8251	2,8459
Jumlah	**16,9683**	**16,9888**	**17,0863**

Perhitungan Bilangan Pengganti Suppositoria Ibuprofen

Formula		a	b	c	d	e	Bilangan Pengganti
FA	Bets 1	16,0758	4,8	16,0522	0,7705	15,2817	0,9703
	Bets 2	16,0966	4,8	15,8910	0,7628	15,1282	0,7877
	Bets 3	16,1057	4,8	15,7320	0,7551	14,9769	0,6689
FB	Bets 1	16,0758	9,6	16,5496	1,5888	14,9608	1,4249
	Bets 2	16,0966	9,6	16,6980	1,6030	15,0950	1,6004
	Bets 3	16,1057	9,6	16,5995	1,5935	15,0060	1,4490
FC	Bets 1	16,0758	14,4	16,9683	2,4434	14,5249	1,5754
	Bets 2	16,0966	14,4	16,9888	2,4464	14,5424	1,5740
	Bets 3	16,1057	14,4	17,0863	2,4604	14,6259	1,6626

Keterangan:

a = bobot 6 supositoria tanpa bahan aktif obat

b = presentase bahan aktif tertentu dalam 6 supositoria

c = bobot 6 supositoria dengan bahan aktif tertentu (b)

d = bahan aktif yang terkandung dalam 6 supositoria ($\frac{b}{100}$ x c)

e = basis yang terkandung dalam 6 supositoria (c-d)

<u>Contoh perhitungan bilangan pengganti supositoria ibuprofen</u>

Contoh perhitungan yang tercantum digunakan untuk formula A bets 1:

$a = \ bobot\ 6\ supositoria\ tanpa\ bahan\ aktif\ obat$

$= 2{,}6873 + 2{,}6950 + 2{,}6707 + 2{,}6855 + 2{,}6622 + 2{,}6751$

$= 16{,}0758\ gram$

$b = \frac{bobot\ ibuprofen\ setiap\ sediaan}{bobot\ sediaan\ supositoria}\ x\ 100\%$

$= \frac{125\ mg}{2600\ mg}\ x\ 100\%$

$= 4{,}8\%$

$c = bobot\ 6\ supositoria\ dengan\ bahan\ aktif\ tertentu$

$= 2{,}6917 + 2{,}6606 + 2{,}6863 + 2{,}6749 + 2{,}6656 + 2{,}6731$

$= 16{,}0522\ gram$

$d = \frac{b}{100}\ x\ c$

$= \frac{4{,}8}{100}\ x\ 16{,}0522$

$= 0{,}7705$

$e = c - d$

$= 16{,}0522 - 0{,}7705$

$= 15{,}2817$

$F = \frac{d}{a - e}$

$= \frac{0{,}7705}{16{,}0758 - 15{,}2817}$

$= 0{,}9703$

Lampiran 5. Formulasi Suppositoria Ibuprofen

Formulasi dalam pembuatan sediaan suppositoria ibuprofen berdasarkan perhitungan bilangan pengganti yaitu:

Formula		Bobot (gram)	
		Basis	**Bahan Aktif**
FA	Bets 1	36,0737	1,7875
	Bets 2	36,0737	1,7876
	Bets 3	36,0738	1,7875
FB	Bets 1	34,7867	4,4779
	Bets 2	34,7868	4,4615
	Bets 3	34,7867	4,4761
FC	Bets 1	33,8422	6,4942
	Bets 2	33,8422	6,4740
	Bets 3	33,8422	6,4850

Contoh perhitungan jumlah basis dan bahan aktif yang digunakan

Formula yang tercantum merupakan penimbangan untuk 13 sediaan supositoria ibuprofen. Contoh perhitungan untuk formula A:

$c = bobot\ 13\ supositoria\ dengan\ bahan\ aktif$

$= 2{,}6\ gram\ x\ 13$

$= 33{,}8\ gram$

$b = \frac{bobot\ ibuprofen\ setiap\ sediaan}{bobot\ sediaan\ supositoria}\ x\ 100\%$

$= \frac{125\ mg}{2600\ mg}\ x\ 100\%$

$= 4{,}8\%$

$d = \frac{b}{100}\ x\ c$

$= \frac{4{,}8}{100}\ x\ 33{,}8$

= 1,6224

$$F = \frac{d}{a - e}$$

$$0{,}8089 = \frac{1{,}6224}{33{,}8 - e}$$

$$e = 32{,}7943\ gram$$

$$Jumlah\ ibuprofen = 125\ mg\ x\ 13$$

$$= 1{,}625\ gram$$

Penimbangan basis lemak coklat dan ibuprofen ditambahkan 10%, sehingga menjadi 36,0737 gram untuk lemak coklat dan 1,7875 gram untuk ibuprofen.

Lampiran 6. Hasil Uji Organoleptis Suppositoria Ibuprofen

Formula		Warna	Bentuk	Kondisi Permukaan
FA	Bets 1	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 2	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 3	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
FB	Bets 1	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 2	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 3	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
FC	Bets 1	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 2	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil
	Bets 3	Putih kekuningan, tidak ada bintik hitam atau noda	Seperti torpedo atau peluru	Tidak ada retak atau lubang-lubang kecil

Lampiran 7. Hasil Uji Keseragaman Bobot Suppositoria Ibuprofen

Formula	Bets 1		Bets 2		Bets 3	
	Bobot (g)	**Persen Deviasi (%)**	**Bobot (g)**	**Persen Deviasi (%)**	**Bobot (g)**	**Persen Deviasi (%)**
FA	2,7779	0,1402	2,7488	0,2992	2,7531	0,5563
	2,7684	0,2022	2,7422	0,0584	2,7765	0,2890
	2,7749	0,0321	2,7300	0,3868	2,7597	0,3179
	2,7647	0,3356	2,7293	0,4123	2,7661	0,0867
	2,7733	0,0256	2,7282	0,4525	2,7683	0,0072
	2,7845	0,3782	2,7471	0,2372	2,7739	0,1951
	2,7645	0,3428	2,7483	0,2810	2,7892	0,7477
	2,7644	0,3464	2,7399	0,0255	2,7614	0,2565
	2,7882	0,5115	2,7570	0,5984	2,7762	0,2781
	2,7793	0,1907	2,7353	0,1934	2,7606	0,2854
Rerata	**2,7740 ± 0,0085**	**0,2505 ± 0,1584**	**2,7406 ± 0,0098**	**0,2945 ± 0,1769**	**2,7685 ± 0,0106**	**0,3020 ± 0,2138**
FB	2,7483	0,5356	2,7841	0,6071	2,7533	0,2319
	2,7733	0,3692	2,7358	1,1383	2,7313	1,0291
	2,7713	0,2968	2,7771	0,3541	2,7596	0,0036
	2,7481	0,5429	2,7107	2,0453	2,7680	0,3008
	2,7815	0,6659	2,8155	1,7418	2,7720	0,4457
	2,7662	0,1122	2,7460	0,7697	2,7935	1,2248
	2,7458	0,6261	2,7969	1,0696	2,7268	1,1922
	2,7705	0,2678	2,7327	1,2503	2,7639	0,1522
	2,7585	0,1665	2,7780	0,3867	2,7798	0,7283
	2,7678	0,1701	2,7964	1,0516	2,7483	0,4131
Rerata	**2,7631 ± 0,0123**	**0,3753 ± 0,2038**	**2,7673 ± 0,0340**	**1,0414 ± 0,5493**	**2,7597 ± 0,0207**	**0,5722 ± 0,4439**
FC	2,8476	0,4622	2,8732	0,1324	2,8531	0,1404
	2,8045	1,0584	2,8899	0,7144	2,8643	0,5335
	2,8713	1,2983	2,8531	0,5681	2,8476	0,0526
	2,8091	0,8961	2,8643	0,1777	2,8414	0,2703

	2,8414	0,2434	2,8768	0,2579	2,8572	0,2843
	2,8551	0,7268	2,8572	0,4252	2,8306	0,6493
	2,8306	0,1376	2,8843	0,5193	2,8659	0,5897
	2,8478	0,4692	2,8828	0,4670	2,8465	0,0913
	2,8018	1,1536	2,8659	0,1220	2,8361	0,4563
	2,8361	0,0564	2,8465	0,7981	2,8478	0,0456
Rerata	**2,8345 ± 0,0231**	**0,6502 ± 0,4416**	**2,8694 ± 0,0144**	**0,4182 ± 0,2404**	**2,8491 ± 0,0114**	**0,3113 ± 0,2309**

Contoh perhitungan simpangan rata-rata pada keseragaman bobot

Perhitungan digunakan untuk formula A bets 1 dengan nomor sampel 1:

$$Rata - rata\ bobot\ FA1 = \frac{Jumlah\ bobot\ FA1}{Jumlah\ sediaan}$$

$$= \frac{27{,}7400}{10}$$

$$= 2{,}7740\ gram$$

$$Simpangan\ rata - rata = \frac{Selisih\ bobot}{Rata - rata\ bobot\ FA1}\ x\ 100\%$$

$$= \frac{2{,}7779 - 2{,}7740}{2{,}7740}$$

$$= 0{,}1402\%$$

Lampiran 8. Hasil Uji Waktu Leleh Suppositoria Ibuprofen

Formula	Waktu Leleh (menit)		
	Bets 1	**Bets 2**	**Bets 3**
FA	15,40	15,37	16,31
	16,53	14,58	16,08
	15,25	15,51	15,27
Rerata	**16,13**	**15,15**	**16,29**
FB	16,56	16,45	16,50
	16,34	16,58	16,08
	16,54	16,41	16,39
Rerata	**16,48**	**16,48**	**16,32**
FC	16,28	16,41	16,58
	16,37	16,09	16,51
	16,30	16,39	16,54
Rerata	**16,32**	**16,30**	**16,54**

Lampiran 9. Pembuatan Larutan Dapar Fosfat pH 7,4 ± 0,1

Media yang digunakan dalam uji disolusi suppositoira ibuprofen berbasis lemak coklat yaitu dapar fosfat pH 7,4 ± 0,1. Sehingga perlu dilakukan pembuatan larutan dapar fosfat pH 7,4 ± 0,1 terlebih dahulu sebelum melakukan pembuatan kurva baku. Larutan dapar fosfat pH 7,4 ± 0,1 dibuat dengan cara memasukkan 50 ml KH_2PO_4 0,2 M dalam labu ukur 200 ml kemudian ditambahkan 39,1 ml NaOH. Setelah itu ditambahkan akuades hingga tanda batas labu ukur (Depkes RI, 1995). Di bawah ini merupakan contoh perhitungan pembuatan larutan dapar fosfat pH 7,4 ± 0,1 sebanyak 1 L:

- Perhitungan bobot KH_2PO_4 untuk larutan KH_2PO_4 0,2 M sebanyak 1 L

  $n = M\ x\ V$

  $= 0{,}2\ x\ 1$

  $= 0{,}2$

  $n = \frac{gram}{Mr}$

  $gram = 0{,}2\ x\ 136{,}09$

  $= 27{,}218\ gram$

  Penimbangan KH_2PO_4 ditambahkan 10%, sehingga menjadi 29,9398 gram

- Perhitungan bobot NaOH untuk larutan NaOH 0,2 M sebanyak 1 L

  $n = M\ x\ V$

  $= 0{,}2\ x\ 1$

  $= 0{,}2$

  $n = \frac{gram}{Mr}$

  $gram = 0{,}2\ x\ 40$

  $= 8\ gram$

Penimbangan NaOH ditambahkan 10%, sehingga menjadi 8,8 gram

- Perhitungan penambahan larutan KH_2PO_4 dan NaOH untuk larutan dapar fosfat pH 7,4 ± 0,1 sebanyak 1 L

  a. Larutan KH_2PO_4

  $$\frac{50}{200} = \frac{x}{1000}$$

  $$x = 250\ ml$$

  b. Larutan NaOH

  $$\frac{39{,}1}{200} = \frac{x}{1000}$$

  $$x = 195{,}5\ ml$$

Sehingga dalam penelitian ini dibuat larutan dapar fosfat pH 7,4 ± 0,1 dengan menimbang KH_2PO_4 0,2 M sebanyak 27,218 gram dan NaOH sebanyak 8,8 gram; kemudian ditambahkan akuades masing-masing hingga tanda batas. Setelah itu diambil KH_2PO_4 0,2 M sebanyak 250 ml dan NaOH sebanyak 195,5 ml ke dalam labu ukur 1000 ml; masing-masing ditambahkan dengan akuades hingga tanda batas. Larutan dapar dicek pHnya dengan pH meter dalam rentang 7,4 ± 0,1. Dalam penelitian, pH diadjust dengan tambahan NaOH sebanyak 5 ml untuk memperoleh pH 7,4 ± 0,1.

Lampiran 10. Data Pembuatan Kurva Baku

- Kurva Baku Ibuprofen – Dapar Fosfat pH 7,4 ± 0,1

  Ibuprofen dengan konsentrasi 100 ppm didapatkan dengan melarutkan 10 mg ibuprofen ke dalam 100 ml dapar fosfat pH 7,4 ± 0,1.
- Hasil penimbangan ibuprofen 10,3 mg dilarutkan dalam 100 ml dapar fosfat pH 7,4 ± 0,1 sehingga kadar larutan baku induk ibuprofen 103 ppm.

Pengenceran Larutan Baku Induk

- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $103 \; x \; 50 = \; M_2 \; x \; 100$

  $M_2 = 51{,}5 \; ppm$
- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $51{,}5 \; x \; 50 = \; M_2 \; x \; 100$

  $M_2 = 25{,}75 \; ppm$
- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $25{,}75 \; x \; 80 = \; M_2 \; x \; 100$

  $M_2 = 20{,}6 \; ppm$
- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $20{,}6 \; x \; 85 = \; M_2 \; x \; 100$

  $M_2 = 17{,}51 \; ppm$
- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $17{,}51 \; x \; 88{,}24 = \; M_2 \; x \; 100$

  $M_2 = 15{,}45 \; ppm$
- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $15{,}45 \; x \; 80 = \; M_2 \; x \; 100$

  $M_2 = 12{,}36 \; ppm$

- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $12{,}36 \; x \; 83{,}33 = \; M_2 \; x \; 100$

  $M_2 = 10{,}29 \; ppm$

- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $10{,}29 \; x \; 80 = \; M_2 \; x \; 100$

  $M_2 = 8{,}23 \; ppm$

- $M_1 \; x \; V_1 = \; M_2 \; x \; V_2$

  $8{,}23 \; x \; 75 = \; M_2 \; x \; 100$

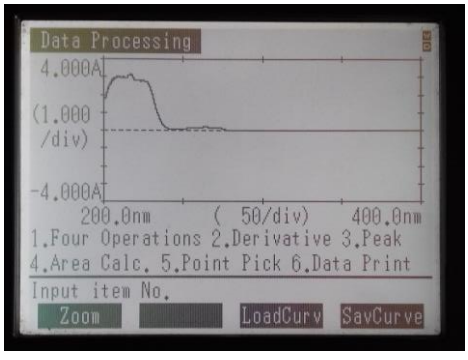
  $M_2 = 6{,}17 \; ppm$

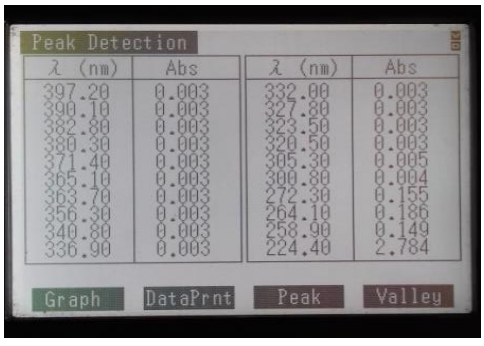
Persamaan kurva baku y = 0,013x + 0,042

R^2 = 0,999

Konsentrasi (ppm)	Absorbansi
20,6	0,859
17,51	0,726
15,45	0,640
12,36	0,502
10,29	0,425
8,23	0,328
6,17	0,254

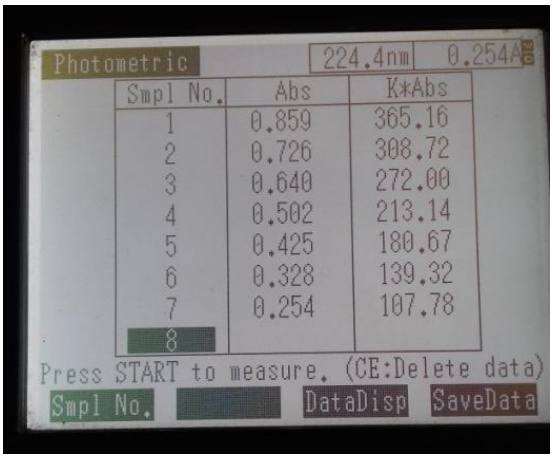
(a) Panjang gelombang maksimum ibuprofen dalam dapar fosfat pH 7,4 ± 0,1



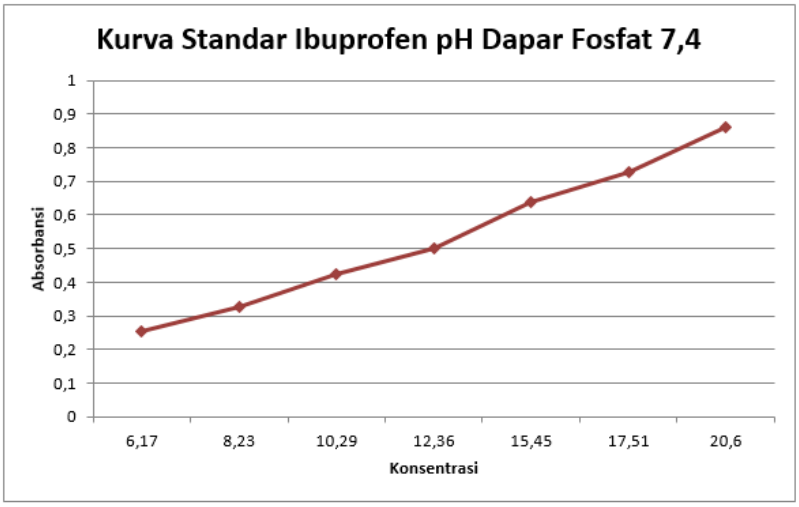


Diperoleh panjang gelombang maksimal Ibuprofen sebesar 224,4 nm dengan absorbansi 2,784

(b) Hasil pengukuran absorbansi kurva baku ibuprofen dalam dapar fosfat pH 7,4 ± 0,1



(c) Grafik kurva baku ibuprofen dalam dapar fosfat pH 7,4 ± 0,1



Lampiran 11. Data Profil Pelepasan Ibuprofen

A. Formula A

- **Bets 1**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,337	0,042	0,013	22,6923	1	22,6923	20,4231	0,0000	20,4231	16,3385	14,6308
	2	0,291	0,042	0,013	19,1538	1	19,1538	17,2385	0,0000	17,2385	13,7908	
	3	0,291	0,042	0,013	19,1538	1	19,1538	17,2385	0,0000	17,2385	13,7908	
	4	0,297	0,042	0,013	19,6154	1	19,6154	17,6538	0,0000	17,6538	14,1231	
	5	0,313	0,042	0,013	20,8462	1	20,8462	18,7615	0,0000	18,7615	15,0092	
	6	0,308	0,042	0,013	20,4615	1	20,4615	18,4154	0,0000	18,4154	14,7323	
10	1	0,414	0,042	0,013	28,6154	1	28,6154	25,7538	0,1135	25,8673	20,6938	21,1551
	2	0,437	0,042	0,013	30,3846	1	30,3846	27,3462	0,0958	27,4419	21,9535	
	3	0,413	0,042	0,013	28,5385	1	28,5385	25,6846	0,0958	25,7804	20,6243	
	4	0,450	0,042	0,013	31,3846	1	31,3846	28,2462	0,0981	28,3442	22,6754	
	5	0,412	0,042	0,013	28,4615	1	28,4615	25,6154	0,1042	25,7196	20,5757	
	6	0,409	0,042	0,013	28,2308	1	28,2308	25,4077	0,1023	25,5100	20,4080	
15	1	0,517	0,042	0,013	36,5385	1	36,5385	32,8846	0,2565	33,1412	26,5129	26,2291
	2	0,501	0,042	0,013	35,3077	1	35,3077	31,7769	0,2477	32,0246	25,6197	
	3	0,518	0,042	0,013	36,6154	1	36,6154	32,9538	0,2385	33,1923	26,5538	
	4	0,531	0,042	0,013	37,6154	1	37,6154	33,8538	0,2550	34,1088	27,2871	
	5	0,513	0,042	0,013	36,2308	1	36,2308	32,6077	0,2465	32,8542	26,2834	
	6	0,492	0,042	0,013	34,6154	1	34,6154	31,1538	0,2435	31,3973	25,1178	

30	1	0,614	0,042	0,013	44,0000	1	44,0000	39,6000	0,4392	40,0392	32,0314	33,5645
	2	0,666	0,042	0,013	48,0000	1	48,0000	43,2000	0,4242	43,6242	34,8994	
	3	0,647	0,042	0,013	46,5385	1	46,5385	41,8846	0,4215	42,3062	33,8449	
	4	0,666	0,042	0,013	48,0000	1	48,0000	43,2000	0,4431	43,6431	34,9145	
	5	0,660	0,042	0,013	47,5385	1	47,5385	42,7846	0,4277	43,2123	34,5698	
	6	0,598	0,042	0,013	42,7692	1	42,7692	38,4923	0,4165	38,9088	31,1271	
45	1	0,742	0,042	0,013	53,8462	1	53,8462	48,4615	0,6592	49,1208	39,2966	41,6968
	2	0,342	0,042	0,013	23,0769	2,5	57,6923	51,9231	0,6642	52,5873	42,0698	
	3	0,346	0,042	0,013	23,3846	2,5	58,4615	52,6154	0,6542	53,2696	42,6157	
	4	0,787	0,042	0,013	57,3077	1	57,3077	51,5769	0,6831	52,2600	41,8080	
	5	0,342	0,042	0,013	23,0769	2,5	57,6923	51,9231	0,6654	52,5885	42,0708	
	6	0,797	0,042	0,013	58,0769	1	58,0769	52,2692	0,6304	52,8996	42,3197	
60	1	0,338	0,042	0,013	22,7692	2,5	56,9231	51,2308	0,9285	52,1592	41,7274	48,9870
	2	0,418	0,042	0,013	28,9231	2,5	72,3077	65,0769	0,9527	66,0296	52,8237	
	3	0,409	0,042	0,013	28,2308	2,5	70,5769	63,5192	0,9465	64,4658	51,5726	
	4	0,349	0,042	0,013	23,6154	2,5	59,0385	53,1346	0,9696	54,1042	43,2834	
	5	0,402	0,042	0,013	27,6923	2,5	69,2308	62,3077	0,9538	63,2615	50,6092	
	6	0,426	0,042	0,013	29,5385	2,5	73,8462	66,4615	0,9208	67,3823	53,9058	
90	1	0,420	0,042	0,013	29,0769	2,5	72,6923	65,4231	1,2131	66,6362	53,3089	65,2011
	2	0,529	0,042	0,013	37,4615	2,5	93,6538	84,2885	1,3142	85,6027	68,4822	
	3	0,511	0,042	0,013	36,0769	2,5	90,1923	81,1731	1,2994	82,4725	65,9780	
	4	0,426	0,042	0,013	29,5385	2,5	73,8462	66,4615	1,2648	67,7263	54,1811	
	5	0,594	0,042	0,013	42,4615	2,5	106,1538	95,5385	1,3000	96,8385	77,4708	
	6	0,553	0,042	0,013	39,3077	2,5	98,2692	88,4423	1,2900	89,7323	71,7858	
120	1	0,460	0,042	0,013	32,1538	2,5	80,3846	72,3462	1,5765	73,9227	59,1382	79,2654

2	0,698	0,042	0,013	50,4615	2,5	126,1538	113,5385	1,7825	115,3210	92,2568
3	0,598	0,042	0,013	42,7692	2,5	106,9231	96,2308	1,7504	97,9812	78,3849
4	0,481	0,042	0,013	33,7692	2,5	84,4231	75,9808	1,6340	77,6148	62,0918
5	0,739	0,042	0,013	53,6154	2,5	134,0385	120,6346	1,8308	122,4654	97,9723
6	0,651	0,042	0,013	46,8462	2,5	117,1154	105,4038	1,7813	107,1852	85,7482

- **Bets 2**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,251	0,042	0,013	16,0769	1	16,0769	14,4692	0,0000	14,4692	11,5754	12,8400
	2	0,264	0,042	0,013	17,0769	1	17,0769	15,3692	0,0000	15,3692	12,2954	
	3	0,282	0,042	0,013	18,4615	1	18,4615	16,6154	0,0000	16,6154	13,2923	
	4	0,257	0,042	0,013	16,5385	1	16,5385	14,8846	0,0000	14,8846	11,9077	
	5	0,253	0,042	0,013	16,2308	1	16,2308	14,6077	0,0000	14,6077	11,6862	
	6	0,336	0,042	0,013	22,6154	1	22,6154	20,3538	0,0000	20,3538	16,2831	
10	1	0,378	0,042	0,013	25,8462	1	25,8462	23,2615	0,0804	23,3419	18,6735	19,6498
	2	0,431	0,042	0,013	29,9231	1	29,9231	26,9308	0,0854	27,0162	21,6129	
	3	0,385	0,042	0,013	26,3846	1	26,3846	23,7462	0,0923	23,8385	19,0708	
	4	0,366	0,042	0,013	24,9231	1	24,9231	22,4308	0,0827	22,5135	18,0108	
	5	0,365	0,042	0,013	24,8462	1	24,8462	22,3615	0,0812	22,4427	17,9542	
	6	0,448	0,042	0,013	31,2308	1	31,2308	28,1077	0,1131	28,2208	22,5766	
15	1	0,449	0,042	0,013	31,3077	1	31,3077	28,1769	0,2096	28,3865	22,7092	22,8878
	2	0,448	0,042	0,013	31,2308	1	31,2308	28,1077	0,2350	28,3427	22,6742	
	3	0,464	0,042	0,013	32,4615	1	32,4615	29,2154	0,2242	29,4396	23,5517	
	4	0,453	0,042	0,013	31,6154	1	31,6154	28,4538	0,2073	28,6612	22,9289	
	5	0,397	0,042	0,013	27,3077	1	27,3077	24,5769	0,2054	24,7823	19,8258	
	6	0,501	0,042	0,013	35,3077	1	35,3077	31,7769	0,2692	32,0462	25,6369	
30	1	0,564	0,042	0,013	40,1538	1	40,1538	36,1385	0,3662	36,5046	29,2037	30,2601
	2	0,619	0,042	0,013	44,3846	1	44,3846	39,9462	0,3912	40,3373	32,2698	
	3	0,607	0,042	0,013	43,4615	1	43,4615	39,1154	0,3865	39,5019	31,6015	

	4	0,644	0,042	0,013	46,3077	1	46,3077	41,6769	0,3654	42,0423	33,6338	
	5	0,452	0,042	0,013	31,5385	1	31,5385	28,3846	0,3419	28,7265	22,9812	
	6	0,611	0,042	0,013	43,7692	1	43,7692	39,3923	0,4458	39,8381	31,8705	
45	1	0,294	0,042	0,013	19,3846	2,5	48,4615	43,6154	0,5669	44,1823	35,3458	39,9434
	2	0,358	0,042	0,013	24,3077	2,5	60,7692	54,6923	0,6131	55,3054	44,2443	
	3	0,709	0,042	0,013	51,3077	1	51,3077	46,1769	0,6038	46,7808	37,4246	
	4	0,473	0,042	0,013	33,1538	2	66,3077	59,6769	0,5969	60,2738	48,2191	
	5	0,383	0,042	0,013	26,2308	2	52,4615	47,2154	0,4996	47,7150	38,1720	
	6	0,687	0,042	0,013	49,6154	1	49,6154	44,6538	0,6646	45,3185	36,2548	
60	1	0,358	0,042	0,013	24,3077	2,5	60,7692	54,6923	0,8092	55,5015	44,4012	50,6950
	2	0,440	0,042	0,013	30,6154	2,5	76,5385	68,8846	0,9169	69,8015	55,8412	
	3	0,425	0,042	0,013	29,4615	2	58,9231	53,0308	0,8604	53,8912	43,1129	
	4	0,581	0,042	0,013	41,4615	2,5	103,6538	93,2885	0,9285	94,2169	75,3735	
	5	0,349	0,042	0,013	23,6154	2,5	59,0385	53,1346	0,7619	53,8965	43,1172	
	6	0,793	0,042	0,013	57,7692	1	57,7692	51,9923	0,9127	52,9050	42,3240	
90	1	0,298	0,042	0,013	19,6923	5	98,4615	88,6154	1,1131	89,7285	71,7828	67,2467
	2	0,683	0,042	0,013	49,3077	2,5	123,2692	110,9423	1,2996	112,2419	89,7935	
	3	0,487	0,042	0,013	34,2308	2	68,4615	61,6154	1,1550	62,7704	50,2163	
	4	0,716	0,042	0,013	51,8462	2,5	129,6154	116,6538	1,4467	118,1006	94,4805	
	5	0,220	0,042	0,013	13,6923	5	68,4615	61,6154	1,0571	62,6725	50,1380	
	6	0,375	0,042	0,013	25,6154	2,5	64,0385	57,6346	1,2015	58,8362	47,0689	
120	1	0,345	0,042	0,013	23,3077	5	116,5385	104,8846	1,6054	106,4900	85,1920	74,8379
	2	0,705	0,042	0,013	51,0000	2,5	127,5000	114,7500	1,9160	116,6660	93,3328	
	3	0,427	0,042	0,013	29,6154	5	148,0769	133,2692	1,4973	134,7665	107,8132	
	4	0,234	0,042	0,013	14,7692	5	73,8462	66,4615	2,0948	68,5563	54,8451	

5	0,241	0,042	0,013	15,3077	5	76,5385	68,8846	1,3994	70,2840	56,2272
6	0,406	0,042	0,013	28,0000	2,5	70,0000	63,0000	1,5217	64,5217	51,6174

- **Bets 3**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,265	0,042	0,013	17,1538	1	17,1538	15,4385	0,0000	15,4385	12,3508	11,1785
	2	0,237	0,042	0,013	15,0000	1	15,0000	13,5000	0,0000	13,5000	10,8000	
	3	0,245	0,042	0,013	15,6154	1	15,6154	14,0538	0,0000	14,0538	11,2431	
	4	0,245	0,042	0,013	15,6154	1	15,6154	14,0538	0,0000	14,0538	11,2431	
	5	0,239	0,042	0,013	15,1538	1	15,1538	13,6385	0,0000	13,6385	10,9108	
	6	0,232	0,042	0,013	14,6154	1	14,6154	13,1538	0,0000	13,1538	10,5231	
10	1	0,351	0,042	0,013	23,7692	1	23,7692	21,3923	0,0858	21,4781	17,1825	16,8067
	2	0,341	0,042	0,013	23,0000	1	23,0000	20,7000	0,0750	20,7750	16,6200	
	3	0,343	0,042	0,013	23,1538	1	23,1538	20,8385	0,0781	20,9165	16,7332	
	4	0,340	0,042	0,013	22,9231	1	22,9231	20,6308	0,0781	20,7088	16,5671	
	5	0,361	0,042	0,013	24,5385	1	24,5385	22,0846	0,0758	22,1604	17,7283	
	6	0,330	0,042	0,013	22,1538	1	22,1538	19,9385	0,0731	20,0115	16,0092	
15	1	0,428	0,042	0,013	29,6923	1	29,6923	26,7231	0,2046	26,9277	21,5422	21,4505
	2	0,428	0,042	0,013	29,6923	1	29,6923	26,7231	0,1900	26,9131	21,5305	
	3	0,429	0,042	0,013	29,7692	1	29,7692	26,7923	0,1938	26,9862	21,5889	
	4	0,418	0,042	0,013	28,9231	1	28,9231	26,0308	0,1927	26,2235	20,9788	
	5	0,448	0,042	0,013	31,2308	1	31,2308	28,1077	0,1985	28,3062	22,6449	
	6	0,408	0,042	0,013	28,1538	1	28,1538	25,3385	0,1838	25,5223	20,4178	
30	1	0,768	0,042	0,013	55,8462	1	55,8462	50,2615	0,3531	50,6146	40,4917	33,8273
	2	0,571	0,042	0,013	40,6923	1	40,6923	36,6231	0,3385	36,9615	29,5692	
	3	0,567	0,042	0,013	40,3846	1	40,3846	36,3462	0,3427	36,6888	29,3511	

	4	0,565	0,042	0,013	40,2308	1	40,2308	36,2077	0,3373	36,5450	29,2360	
	5	0,608	0,042	0,013	43,5385	1	43,5385	39,1846	0,3546	39,5392	31,6314	
	6	0,425	0,042	0,013	29,4615	2	58,9231	53,0308	0,3246	53,3554	42,6843	
45	1	0,533	0,042	0,013	37,7692	2	75,5385	67,9846	0,6323	68,6169	54,8935	45,2106
	2	0,418	0,042	0,013	28,9231	2	57,8462	52,0615	0,5419	52,6035	42,0828	
	3	0,468	0,042	0,013	32,7692	2	65,5385	58,9846	0,5446	59,5292	47,6234	
	4	0,705	0,042	0,013	51,0000	1	51,0000	45,9000	0,5385	46,4385	37,1508	
	5	0,736	0,042	0,013	53,3846	1	53,3846	48,0462	0,5723	48,6185	38,8948	
	6	0,404	0,042	0,013	27,8462	2,5	69,6154	62,6538	0,6192	63,2731	50,6185	
60	1	0,391	0,042	0,013	26,8462	2,5	67,1154	60,4038	1,0100	61,4138	49,1311	50,0054
	2	0,359	0,042	0,013	24,3846	2,5	60,9615	54,8654	0,8312	55,6965	44,5572	
	3	0,490	0,042	0,013	34,4615	2,5	86,1538	77,5385	0,8723	78,4108	62,7286	
	4	0,366	0,042	0,013	24,9231	2	49,8462	44,8615	0,7935	45,6550	36,5240	
	5	0,382	0,042	0,013	26,1538	2,5	65,3846	58,8462	0,8392	59,6854	47,7483	
	6	0,465	0,042	0,013	32,5385	2,5	81,3462	73,2115	0,9673	74,1788	59,3431	
90	1	0,401	0,042	0,013	27,6154	2,5	69,0385	62,1346	1,3456	63,4802	50,7842	62,8285
	2	0,394	0,042	0,013	27,0769	2,5	67,6923	60,9231	1,1360	62,0590	49,6472	
	3	0,666	0,042	0,013	48,0000	2,5	120,0000	108,0000	1,3031	109,3031	87,4425	
	4	0,527	0,042	0,013	37,3077	2,5	93,2692	83,9423	1,0427	84,9850	67,9880	
	5	0,437	0,042	0,013	30,3846	2,5	75,9615	68,3654	1,1662	69,5315	55,6252	
	6	0,507	0,042	0,013	35,7692	2,5	89,4231	80,4808	1,3740	81,8548	65,4838	
120	1	0,482	0,042	0,013	33,8462	2,5	84,6154	76,1538	1,6908	77,8446	62,2757	71,3413
	2	0,441	0,042	0,013	30,6923	2,5	76,7308	69,0577	1,4744	70,5321	56,4257	
	3	0,767	0,042	0,013	55,7692	2,5	139,4231	125,4808	1,9031	127,3838	101,9071	
	4	0,597	0,042	0,013	42,6923	2,5	106,7308	96,0577	1,5090	97,5667	78,0534	

5	0,478	0,042	0,013	33,5385	2,5	83,8462	75,4615	1,5460	77,0075	61,6060
6	0,521	0,042	0,013	36,8462	2,5	92,1154	82,9038	1,8212	84,7250	67,7800

B. Formula B

- **Bets 1**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,354	0,042	0,013	24,0000	1	24,0000	21,6000	0,0000	21,6000	17,2800	18,8308
	2	0,462	0,042	0,013	32,3077	1	32,3077	29,0769	0,0000	29,0769	23,2615	
	3	0,406	0,042	0,013	28,0000	1	28,0000	25,2000	0,0000	25,2000	20,1600	
	4	0,398	0,042	0,013	27,3846	1	27,3846	24,6462	0,0000	24,6462	19,7169	
	5	0,380	0,042	0,013	26,0000	1	26,0000	23,4000	0,0000	23,4000	18,7200	
	6	0,292	0,042	0,013	19,2308	1	19,2308	17,3077	0,0000	17,3077	13,8462	
10	1	0,574	0,042	0,013	40,9231	1	40,9231	36,8308	0,1200	36,9508	29,5606	25,2492
	2	0,539	0,042	0,013	38,2308	1	38,2308	34,4077	0,1615	34,5692	27,6554	
	3	0,439	0,042	0,013	30,5385	1	30,5385	27,4846	0,1400	27,6246	22,0997	
	4	0,485	0,042	0,013	34,0769	1	34,0769	30,6692	0,1369	30,8062	24,6449	
	5	0,477	0,042	0,013	33,4615	1	33,4615	30,1154	0,1300	30,2454	24,1963	
	6	0,462	0,042	0,013	32,3077	1	32,3077	29,0769	0,0962	29,1731	23,3385	
15	1	0,621	0,042	0,013	44,5385	1	44,5385	40,0846	0,3246	40,4092	32,3274	26,9489
	2	0,552	0,042	0,013	39,2308	1	39,2308	35,3077	0,3527	35,6604	28,5283	
	3	0,452	0,042	0,013	31,5385	1	31,5385	28,3846	0,2927	28,6773	22,9418	
	4	0,488	0,042	0,013	34,3077	1	34,3077	30,8769	0,3073	31,1842	24,9474	
	5	0,491	0,042	0,013	34,5385	1	34,5385	31,0846	0,2973	31,3819	25,1055	
	6	0,541	0,042	0,013	38,3846	1	38,3846	34,5462	0,2577	34,8038	27,8431	
30	1	0,754	0,042	0,013	54,7692	1	54,7692	49,2923	0,5473	49,8396	39,8717	37,1681

	2	0,739	0,042	0,013	53,6154	1	53,6154	48,2538	0,5488	48,8027	39,0422	
	3	0,709	0,042	0,013	51,3077	1	51,3077	46,1769	0,4504	46,6273	37,3018	
	4	0,642	0,042	0,013	46,1538	1	46,1538	41,5385	0,4788	42,0173	33,6138	
	5	0,681	0,042	0,013	49,1538	1	49,1538	44,2385	0,4700	44,7085	35,7668	
	6	0,711	0,042	0,013	51,4615	1	51,4615	46,3154	0,4496	46,7650	37,4120	
45	1	0,338	0,042	0,013	22,7692	2,5	56,9231	51,2308	0,8212	52,0519	41,6415	46,3031
	2	0,415	0,042	0,013	28,6923	2,5	71,7308	64,5577	0,8169	65,3746	52,2997	
	3	0,404	0,042	0,013	27,8462	2	55,6923	50,1231	0,7069	50,8300	40,6640	
	4	0,311	0,042	0,013	20,6923	2,5	51,7308	46,5577	0,7096	47,2673	37,8138	
	5	0,471	0,042	0,013	33,0000	2,5	82,5000	74,2500	0,7158	74,9658	59,9726	
	6	0,366	0,042	0,013	24,9231	2,5	62,3077	56,0769	0,7069	56,7838	45,4271	
60	1	0,404	0,042	0,013	27,8462	2,5	69,6154	62,6538	1,1058	63,7596	51,0077	60,8740
	2	0,507	0,042	0,013	35,7692	2,5	89,4231	80,4808	1,1756	81,6563	65,3251	
	3	0,535	0,042	0,013	37,9231	2,5	94,8077	85,3269	0,9854	86,3123	69,0498	
	4	0,354	0,042	0,013	24,0000	2,5	60,0000	54,0000	0,9683	54,9683	43,9746	
	5	0,606	0,042	0,013	43,3846	2,5	108,4615	97,6154	1,1283	98,7437	78,9949	
	6	0,447	0,042	0,013	31,1538	2,5	77,8846	70,0962	1,0185	71,1146	56,8917	
90	1	0,320	0,042	0,013	21,3846	5	106,9231	96,2308	1,4538	97,6846	78,1477	80,4997
	2	0,772	0,042	0,013	56,1538	2,5	140,3846	126,3462	1,6227	127,9688	102,3751	
	3	0,534	0,042	0,013	37,8462	2,5	94,6154	85,1538	1,4594	86,6133	69,2906	
	4	0,626	0,042	0,013	44,9231	2,5	112,3077	101,0769	1,2683	102,3452	81,8762	
	5	0,571	0,042	0,013	40,6923	2,5	101,7308	91,5577	1,6706	93,2283	74,5826	
	6	0,588	0,042	0,013	42,0000	2,5	105,0000	94,5000	1,4079	95,9079	76,7263	
120	1	0,354	0,042	0,013	24,0000	5	120,0000	108,0000	1,9885	109,9885	87,9908	83,0865
	2	0,304	0,042	0,013	20,1538	5	100,7692	90,6923	2,3246	93,0169	74,4135	

3	0,342	0,042	0,013	23,0769	5	115,3846	103,8462	1,9325	105,7787	84,6229
4	0,206	0,042	0,013	12,6154	5	63,0769	56,7692	1,8298	58,5990	46,8792
5	0,445	0,042	0,013	31,0000	5	155,0000	139,5000	2,1792	141,6792	113,3434
6	0,690	0,042	0,013	49,8462	2,5	124,6154	112,1538	1,9329	114,0867	91,2694

- **Bets 2**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,344	0,042	0,013	23,2308	1	23,2308	20,9077	0,0000	20,9077	16,7262	17,0769
	2	0,352	0,042	0,013	23,8462	1	23,8462	21,4615	0,0000	21,4615	17,1692	
	3	0,317	0,042	0,013	21,1538	1	21,1538	19,0385	0,0000	19,0385	15,2308	
	4	0,388	0,042	0,013	26,6154	1	26,6154	23,9538	0,0000	23,9538	19,1631	
	5	0,347	0,042	0,013	23,4615	1	23,4615	21,1154	0,0000	21,1154	16,8923	
	6	0,354	0,042	0,013	24,0000	1	24,0000	21,6000	0,0000	21,6000	17,2800	
10	1	0,477	0,042	0,013	33,4615	1	33,4615	30,1154	0,1162	30,2315	24,1852	24,6118
	2	0,514	0,042	0,013	36,3077	1	36,3077	32,6769	0,1192	32,7962	26,2369	
	3	0,457	0,042	0,013	31,9231	1	31,9231	28,7308	0,1058	28,8365	23,0692	
	4	0,472	0,042	0,013	33,0769	1	33,0769	29,7692	0,1331	29,9023	23,9218	
	5	0,513	0,042	0,013	36,2308	1	36,2308	32,6077	0,1173	32,7250	26,1800	
	6	0,475	0,042	0,013	33,3077	1	33,3077	29,9769	0,1200	30,0969	24,0775	
15	1	0,535	0,042	0,013	37,9231	1	37,9231	34,1308	0,2835	34,4142	27,5314	30,4803
	2	0,607	0,042	0,013	43,4615	1	43,4615	39,1154	0,3008	39,4162	31,5329	
	3	0,580	0,042	0,013	41,3846	1	41,3846	37,2462	0,2654	37,5115	30,0092	
	4	0,610	0,042	0,013	43,6923	1	43,6923	39,3231	0,2985	39,6215	31,6972	
	5	0,626	0,042	0,013	44,9231	1	44,9231	40,4308	0,2985	40,7292	32,5834	
	6	0,571	0,042	0,013	40,6923	1	40,6923	36,6231	0,2865	36,9096	29,5277	
30	1	0,777	0,042	0,013	56,5385	1	56,5385	50,8846	0,4731	51,3577	41,0862	41,4853
	2	0,358	0,042	0,013	24,3077	2,5	60,7692	54,6923	0,5181	55,2104	44,1683	
	3	0,720	0,042	0,013	52,1538	1	52,1538	46,9385	0,4723	47,4108	37,9286	

	4	0,355	0,042	0,013	24,0769	2,5	60,1923	54,1731	0,5169	54,6900	43,7520	
	5	0,359	0,042	0,013	24,3846	2,5	60,9615	54,8654	0,5231	55,3885	44,3108	
	6	0,715	0,042	0,013	51,7692	1	51,7692	46,5923	0,4900	47,0823	37,6658	
45	1	0,378	0,042	0,013	25,8462	2,5	64,6154	58,1538	0,7558	58,9096	47,1277	52,2735
	2	0,590	0,042	0,013	42,1538	2,5	105,3846	94,8462	0,8219	95,6681	76,5345	
	3	0,348	0,042	0,013	23,5385	2,5	58,8462	52,9615	0,7331	53,6946	42,9557	
	4	0,449	0,042	0,013	31,3077	2,5	78,2692	70,4423	0,8179	71,2602	57,0082	
	5	0,364	0,042	0,013	24,7692	2,5	61,9231	55,7308	0,8279	56,5587	45,2469	
	6	0,361	0,042	0,013	24,5385	2,5	61,3462	55,2115	0,7488	55,9604	44,7683	
60	1	0,541	0,042	0,013	38,3846	2,5	95,9615	86,3654	1,0788	87,4442	69,9554	61,6297
	2	0,345	0,042	0,013	23,3077	5	116,5385	104,8846	1,3488	106,2335	84,9868	
	3	0,366	0,042	0,013	24,9231	2,5	62,3077	56,0769	1,0273	57,1042	45,6834	
	4	0,539	0,042	0,013	38,2308	2,5	95,5769	86,0192	1,2092	87,2285	69,7828	
	5	0,386	0,042	0,013	26,4615	2,5	66,1538	59,5385	1,1375	60,6760	48,5408	
	6	0,403	0,042	0,013	27,7692	2,5	69,4231	62,4808	1,0556	63,5363	50,8291	
90	1	0,350	0,042	0,013	23,6923	5	118,4615	106,6154	1,5587	108,1740	86,5392	80,7516
	2	0,433	0,042	0,013	30,0769	5	150,3846	135,3462	1,9315	137,2777	109,8222	
	3	0,474	0,042	0,013	33,2308	2,5	83,0769	74,7692	1,3388	76,1081	60,8865	
	4	0,711	0,042	0,013	51,4615	2,5	128,6538	115,7885	1,6871	117,4756	93,9805	
	5	0,455	0,042	0,013	31,7692	2,5	79,4231	71,4808	1,4683	72,9490	58,3592	
	6	0,575	0,042	0,013	41,0000	2,5	102,5000	92,2500	1,4027	93,6527	74,9222	
120	1	0,426	0,042	0,013	29,5385	5	147,6923	132,9231	2,1510	135,0740	108,0592	97,7625
	2	0,550	0,042	0,013	39,0769	5	195,3846	175,8462	2,6835	178,5296	142,8237	
	3	0,616	0,042	0,013	44,1538	2,5	110,3846	99,3462	1,7542	101,1004	80,8803	
	4	0,410	0,042	0,013	28,3077	5	141,5385	127,3846	2,3304	129,7150	103,7720	

5	0,495	0,042	0,013	34,8462	2,5	87,1154	78,4038	1,8654	80,2692	64,2154
6	0,658	0,042	0,013	47,3846	2,5	118,4615	106,6154	1,9152	108,5306	86,8245

- **Bets 3**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,383	0,042	0,013	26,2308	1	26,2308	23,6077	0,0000	23,6077	18,8862	17,6677
	2	0,338	0,042	0,013	22,7692	1	22,7692	20,4923	0,0000	20,4923	16,3938	
	3	0,341	0,042	0,013	23,0000	1	23,0000	20,7000	0,0000	20,7000	16,5600	
	4	0,341	0,042	0,013	23,0000	1	23,0000	20,7000	0,0000	20,7000	16,5600	
	5	0,405	0,042	0,013	27,9231	1	27,9231	25,1308	0,0000	25,1308	20,1046	
	6	0,358	0,042	0,013	24,3077	1	24,3077	21,8769	0,0000	21,8769	17,5015	
10	1	0,504	0,042	0,013	35,5385	1	35,5385	31,9846	0,1312	32,1158	25,6926	25,2520
	2	0,495	0,042	0,013	34,8462	1	34,8462	31,3615	0,1138	31,4754	25,1803	
	3	0,475	0,042	0,013	33,3077	1	33,3077	29,9769	0,1150	30,0919	24,0735	
	4	0,502	0,042	0,013	35,3846	1	35,3846	31,8462	0,1150	31,9612	25,5689	
	5	0,493	0,042	0,013	34,6923	1	34,6923	31,2231	0,1396	31,3627	25,0902	
	6	0,508	0,042	0,013	35,8462	1	35,8462	32,2615	0,1215	32,3831	25,9065	
15	1	0,589	0,042	0,013	42,0769	1	42,0769	37,8692	0,3088	38,1781	30,5425	31,3917
	2	0,602	0,042	0,013	43,0769	1	43,0769	38,7692	0,2881	39,0573	31,2458	
	3	0,602	0,042	0,013	43,0769	1	43,0769	38,7692	0,2815	39,0508	31,2406	
	4	0,619	0,042	0,013	44,3846	1	44,3846	39,9462	0,2919	40,2381	32,1905	
	5	0,594	0,042	0,013	42,4615	1	42,4615	38,2154	0,3131	38,5285	30,8228	
	6	0,621	0,042	0,013	44,5385	1	44,5385	40,0846	0,3008	40,3854	32,3083	
30	1	0,743	0,042	0,013	53,9231	1	53,9231	48,5308	0,5192	49,0500	39,2400	41,0125
	2	0,769	0,042	0,013	55,9231	1	55,9231	50,3308	0,5035	50,8342	40,6674	
	3	0,766	0,042	0,013	55,6923	1	55,6923	50,1231	0,4969	50,6200	40,4960	

	4	0,799	0,042	0,013	58,2308	1	58,2308	52,4077	0,5138	52,9215	42,3372	
	5	0,784	0,042	0,013	57,0769	1	57,0769	51,3692	0,5254	51,8946	41,5157	
	6	0,341	0,042	0,013	23,0000	2,5	57,5000	51,7500	0,5235	52,2735	41,8188	
45	1	0,375	0,042	0,013	25,6154	2,5	64,0385	57,6346	0,7888	58,4235	46,7388	46,1673
	2	0,358	0,042	0,013	24,3077	2,5	60,7692	54,6923	0,7831	55,4754	44,3803	
	3	0,403	0,042	0,013	27,7692	2,5	69,4231	62,4808	0,7754	63,2562	50,6049	
	4	0,353	0,042	0,013	23,9231	2,5	59,8077	53,8269	0,8050	54,6319	43,7055	
	5	0,358	0,042	0,013	24,3077	2,5	60,7692	54,6923	0,8108	55,5031	44,4025	
	6	0,378	0,042	0,013	25,8462	2,5	64,6154	58,1538	0,8110	58,9648	47,1718	
60	1	0,510	0,042	0,013	36,0000	2,5	90,0000	81,0000	1,1090	82,1090	65,6872	63,1049
	2	0,438	0,042	0,013	30,4615	2,5	76,1538	68,5385	1,0869	69,6254	55,7003	
	3	0,560	0,042	0,013	39,8462	2,5	99,6154	89,6538	1,1225	90,7763	72,6211	
	4	0,435	0,042	0,013	30,2308	2,5	75,5769	68,0192	1,1040	69,1233	55,2986	
	5	0,399	0,042	0,013	27,4615	2,5	68,6538	61,7885	1,1146	62,9031	50,3225	
	6	0,324	0,042	0,013	21,6923	5	108,4615	97,6154	1,1340	98,7494	78,9995	
90	1	0,326	0,042	0,013	21,8462	5	109,2308	98,3077	1,5590	99,8667	79,8934	79,6274
	2	0,525	0,042	0,013	37,1538	2,5	92,8846	83,5962	1,4677	85,0638	68,0511	
	3	0,596	0,042	0,013	42,6154	2,5	106,5385	95,8846	1,6206	97,5052	78,0042	
	4	0,300	0,042	0,013	19,8462	5	99,2308	89,3077	1,4819	90,7896	72,6317	
	5	0,428	0,042	0,013	29,6923	2,5	74,2308	66,8077	1,4579	68,2656	54,6125	
	6	0,487	0,042	0,013	34,2308	5	171,1538	154,0385	1,6763	155,7148	124,5718	
120	1	0,377	0,042	0,013	25,7692	5	128,8462	115,9615	2,1052	118,0667	94,4534	112,5322
	2	0,322	0,042	0,013	21,5385	5	107,6923	96,9231	1,9321	98,8552	79,0842	
	3	0,585	0,042	0,013	41,7692	5	208,8462	187,9615	2,1533	190,1148	152,0918	
	4	0,329	0,042	0,013	22,0769	5	110,3846	99,3462	1,9781	101,3242	81,0594	

5	0,469	0,042	0,013	32,8462	5	164,2308	147,8077	1,8290	149,6367	119,7094
6	0,572	0,042	0,013	40,7692	5	203,8462	183,4615	2,5321	185,9937	148,7949

C. Formula C

- **Bets 1**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,353	0,042	0,013	23,9231	1	23,9231	21,5308	0,0000	21,5308	17,2246	18,1938
	2	0,313	0,042	0,013	20,8462	1	20,8462	18,7615	0,0000	18,7615	15,0092	
	3	0,399	0,042	0,013	27,4615	1	27,4615	24,7154	0,0000	24,7154	19,7723	
	4	0,392	0,042	0,013	26,9231	1	26,9231	24,2308	0,0000	24,2308	19,3846	
	5	0,411	0,042	0,013	28,3846	1	28,3846	25,5462	0,0000	25,5462	20,4369	
	6	0,355	0,042	0,013	24,0769	1	24,0769	21,6692	0,0000	21,6692	17,3354	
10	1	0,633	0,042	0,013	45,4615	1	45,4615	40,9154	0,1196	41,0350	32,8280	29,2149
	2	0,518	0,042	0,013	36,6154	1	36,6154	32,9538	0,1042	33,0581	26,4465	
	3	0,553	0,042	0,013	39,3077	1	39,3077	35,3769	0,1373	35,5142	28,4114	
	4	0,538	0,042	0,013	38,1538	1	38,1538	34,3385	0,1346	34,4731	27,5785	
	5	0,555	0,042	0,013	39,4615	1	39,4615	35,5154	0,1419	35,6573	28,5258	
	6	0,609	0,042	0,013	43,6154	1	43,6154	39,2538	0,1204	39,3742	31,4994	
15	1	0,399	0,042	0,013	27,4615	2,5	68,6538	61,7885	0,3469	62,1354	49,7083	39,2259
	2	0,687	0,042	0,013	49,6154	1	49,6154	44,6538	0,2873	44,9412	35,9529	
	3	0,679	0,042	0,013	49,0000	1	49,0000	44,1000	0,3338	44,4338	35,5471	
	4	0,674	0,042	0,013	48,6154	1	48,6154	43,7538	0,3254	44,0792	35,2634	
	5	0,709	0,042	0,013	51,3077	1	51,3077	46,1769	0,3392	46,5162	37,2129	
	6	0,341	0,042	0,013	23,0000	2,5	57,5000	51,7500	0,3385	52,0885	41,6708	
30	1	0,575	0,042	0,013	41,0000	2,5	102,5000	92,2500	0,6902	92,9402	74,3522	53,8101

	2	0,399	0,042	0,013	27,4615	2,5	68,6538	61,7885	0,5354	62,3238	49,8591	
	3	0,353	0,042	0,013	23,9231	2,5	59,8077	53,8269	0,5788	54,4058	43,5246	
	4	0,376	0,042	0,013	25,6923	2,5	64,2308	57,8077	0,5685	58,3762	46,7009	
	5	0,392	0,042	0,013	26,9231	2,5	67,3077	60,5769	0,5958	61,1727	48,9382	
	6	0,468	0,042	0,013	32,7692	2,5	81,9231	73,7308	0,6260	74,3567	59,4854	
45	1	0,697	0,042	0,013	50,3846	2,5	125,9615	113,3654	1,2027	114,5681	91,6545	63,7525
	2	0,464	0,042	0,013	32,4615	2,5	81,1538	73,0385	0,8787	73,9171	59,1337	
	3	0,407	0,042	0,013	28,0769	2,5	70,1923	63,1731	0,8779	64,0510	51,2408	
	4	0,418	0,042	0,013	28,9231	2,5	72,3077	65,0769	0,8896	65,9665	52,7732	
	5	0,424	0,042	0,013	29,3846	2,5	73,4615	66,1154	0,9323	67,0477	53,6382	
	6	0,571	0,042	0,013	40,6923	2,5	101,7308	91,5577	1,0356	92,5933	74,0746	
60	1	0,426	0,042	0,013	29,5385	5	147,6923	132,9231	1,8325	134,7556	107,8045	73,5870
	2	0,549	0,042	0,013	39,0000	2,5	97,5000	87,7500	1,2844	89,0344	71,2275	
	3	0,430	0,042	0,013	29,8462	2,5	74,6154	67,1538	1,2288	68,3827	54,7062	
	4	0,428	0,042	0,013	29,6923	2,5	74,2308	66,8077	1,2512	68,0588	54,4471	
	5	0,487	0,042	0,013	34,2308	2,5	85,5769	77,0192	1,2996	78,3188	62,6551	
	6	0,688	0,042	0,013	49,6923	2,5	124,2308	111,8077	1,5442	113,3519	90,6815	
90	1	0,545	0,042	0,013	38,6923	5	193,4615	174,1154	2,5710	176,6863	141,3491	90,1434
	2	0,676	0,042	0,013	48,7692	2,5	121,9231	109,7308	1,7719	111,5027	89,2022	
	3	0,479	0,042	0,013	33,6154	2,5	84,0385	75,6346	1,6019	77,2365	61,7892	
	4	0,509	0,042	0,013	35,9231	2,5	89,8077	80,8269	1,6223	82,4492	65,9594	
	5	0,520	0,042	0,013	36,7692	2,5	91,9231	82,7308	1,7275	84,4583	67,5666	
	6	0,451	0,042	0,013	31,4615	5	157,3077	141,5769	2,1654	143,7423	114,9938	
120	1	0,665	0,042	0,013	47,9231	5	239,6154	215,6538	3,5383	219,1921	175,3537	141,4511
	2	0,438	0,042	0,013	30,4615	5	152,3077	137,0769	2,3815	139,4585	111,5668	

3	0,590	0,042	0,013	42,1538	5	210,7692	189,6923	2,0221	191,7144	153,3715
4	0,411	0,042	0,013	28,3846	5	141,9231	127,7308	2,0713	129,8021	103,8417
5	0,606	0,042	0,013	43,3846	5	216,9231	195,2308	2,1871	197,4179	157,9343
6	0,563	0,042	0,013	40,0769	5	200,3846	180,3462	2,9519	183,2981	146,6385

- **Bets 2**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,566	0,042	0,013	40,3077	1	40,3077	36,2769	0,0000	36,2769	29,0215	19,7077
	2	0,381	0,042	0,013	26,0769	1	26,0769	23,4692	0,0000	23,4692	18,7754	
	3	0,349	0,042	0,013	23,6154	1	23,6154	21,2538	0,0000	21,2538	17,0031	
	4	0,347	0,042	0,013	23,4615	1	23,4615	21,1154	0,0000	21,1154	16,8923	
	5	0,393	0,042	0,013	27,0000	1	27,0000	24,3000	0,0000	24,3000	19,4400	
	6	0,351	0,042	0,013	23,7692	1	23,7692	21,3923	0,0000	21,3923	17,1138	
10	1	0,581	0,042	0,013	41,4615	1	41,4615	37,3154	0,2015	37,5169	30,0135	27,6818
	2	0,514	0,042	0,013	36,3077	1	36,3077	32,6769	0,1304	32,8073	26,2458	
	3	0,599	0,042	0,013	42,8462	1	42,8462	38,5615	0,1181	38,6796	30,9437	
	4	0,512	0,042	0,013	36,1538	1	36,1538	32,5385	0,1173	32,6558	26,1246	
	5	0,510	0,042	0,013	36,0000	1	36,0000	32,4000	0,1350	32,5350	26,0280	
	6	0,523	0,042	0,013	37,0000	1	37,0000	33,3000	0,1188	33,4188	26,7351	
15	1	0,647	0,042	0,013	46,5385	1	46,5385	41,8846	0,4088	42,2935	33,8348	37,0704
	2	0,671	0,042	0,013	48,3846	1	48,3846	43,5462	0,3119	43,8581	35,0865	
	3	0,331	0,042	0,013	22,2308	2,5	55,5769	50,0192	0,3323	50,3515	40,2812	
	4	0,786	0,042	0,013	57,2308	1	57,2308	51,5077	0,2981	51,8058	41,4446	
	5	0,709	0,042	0,013	51,3077	1	51,3077	46,1769	0,3150	46,4919	37,1935	
	6	0,662	0,042	0,013	47,6923	1	47,6923	42,9231	0,3038	43,2269	34,5815	
30	1	0,784	0,042	0,013	57,0769	1	57,0769	51,3692	0,6415	52,0108	41,6086	55,4225
	2	0,357	0,042	0,013	24,2308	2,5	60,5769	54,5192	0,5538	55,0731	44,0585	
	3	0,516	0,042	0,013	36,4615	2,5	91,1538	82,0385	0,6102	82,6487	66,1189	

	4	0,570	0,042	0,013	40,6154	2,5	101,5385	91,3846	0,5842	91,9688	73,5751	
	5	0,416	0,042	0,013	28,7692	2,5	71,9231	64,7308	0,5715	65,3023	52,2418	
	6	0,534	0,042	0,013	37,8462	2	75,6923	68,1231	0,5423	68,6654	54,9323	
45	1	0,412	0,042	0,013	28,4615	2,5	71,1538	64,0385	0,9269	64,9654	51,9723	67,1832
	2	0,435	0,042	0,013	30,2308	2,5	75,5769	68,0192	0,8567	68,8760	55,1008	
	3	0,605	0,042	0,013	43,3077	2,5	108,2692	97,4423	1,0660	98,5083	78,8066	
	4	0,719	0,042	0,013	52,0769	2,5	130,1923	117,1731	1,0919	118,2650	94,6120	
	5	0,420	0,042	0,013	29,0769	2,5	72,6923	65,4231	0,9312	66,3542	53,0834	
	6	0,663	0,042	0,013	47,7692	2	95,5385	85,9846	0,9208	86,9054	69,5243	
60	1	0,426	0,042	0,013	29,5385	2,5	73,8462	66,4615	1,2827	67,7442	54,1954	80,2491
	2	0,521	0,042	0,013	36,8462	2,5	92,1154	82,9038	1,2346	84,1385	67,3108	
	3	0,730	0,042	0,013	52,9231	2,5	132,3077	119,0769	1,6073	120,6842	96,5474	
	4	0,456	0,042	0,013	31,8462	5	159,2308	143,3077	1,7429	145,0506	116,0405	
	5	0,485	0,042	0,013	34,0769	2,5	85,1923	76,6731	1,2946	77,9677	62,3742	
	6	0,648	0,042	0,013	46,6154	2,5	116,5385	104,8846	1,3985	106,2831	85,0265	
90	1	0,500	0,042	0,013	35,2308	5	176,1538	158,5385	1,6519	160,1904	128,1523	105,8424
	2	0,667	0,042	0,013	48,0769	2,5	120,1923	108,1731	1,6952	109,8683	87,8946	
	3	0,443	0,042	0,013	30,8462	5	154,2308	138,8077	2,2688	141,0765	112,8612	
	4	0,534	0,042	0,013	37,8462	5	189,2308	170,3077	2,5390	172,8467	138,2774	
	5	0,558	0,042	0,013	39,6923	2,5	99,2308	89,3077	1,7206	91,0283	72,8226	
	6	0,717	0,042	0,013	51,9231	2,5	129,8077	116,8269	1,9812	118,8081	95,0465	
120	1	0,643	0,042	0,013	46,2308	5	231,1538	208,0385	2,5327	210,5712	168,4569	129,5217
	2	0,382	0,042	0,013	26,1538	5	130,7692	117,6923	2,2962	119,9885	95,9908	
	3	0,525	0,042	0,013	37,1538	5	185,7692	167,1923	3,0400	170,2323	136,1858	
	4	0,600	0,042	0,013	42,9231	5	214,6154	193,1538	3,4852	196,6390	157,3112	

5	0,689	0,042	0,013	49,7692	2,5	124,4231	111,9808	2,2167	114,1975	91,3580
6	0,496	0,042	0,013	34,9231	5	174,6154	157,1538	2,6302	159,7840	127,8272

- **Bets 3**

Waktu (Menit)	Vessel	Absorbansi	b	a	Kadar Terbaca	FP	Kadar x FP	Kadar dalam 900 ml	FK	Kadar Sesungguhnya	Persen Terdisolusi	Rata-rata
5	1	0,389	0,042	0,013	26,6923	1	26,6923	24,0231	0,0000	24,0231	19,2185	21,0646
	2	0,447	0,042	0,013	31,1538	1	31,1538	28,0385	0,0000	28,0385	22,4308	
	3	0,406	0,042	0,013	28,0000	1	28,0000	25,2000	0,0000	25,2000	20,1600	
	4	0,463	0,042	0,013	32,3846	1	32,3846	29,1462	0,0000	29,1462	23,3169	
	5	0,477	0,042	0,013	33,4615	1	33,4615	30,1154	0,0000	30,1154	24,0923	
	6	0,352	0,042	0,013	23,8462	1	23,8462	21,4615	0,0000	21,4615	17,1692	
10	1	0,492	0,042	0,013	34,6154	1	34,6154	31,1538	0,1335	31,2873	25,0298	30,1263
	2	0,572	0,042	0,013	40,7692	1	40,7692	36,6923	0,1558	36,8481	29,4785	
	3	0,556	0,042	0,013	39,5385	1	39,5385	35,5846	0,1400	35,7246	28,5797	
	4	0,611	0,042	0,013	43,7692	1	43,7692	39,3923	0,1619	39,5542	31,6434	
	5	0,749	0,042	0,013	54,3846	1	54,3846	48,9462	0,1673	49,1135	39,2908	
	6	0,523	0,042	0,013	37,0000	1	37,0000	33,3000	0,1192	33,4192	26,7354	
15	1	0,696	0,042	0,013	50,3077	1	50,3077	45,2769	0,3065	45,5835	36,4668	40,4699
	2	0,707	0,042	0,013	51,1538	1	51,1538	46,0385	0,3596	46,3981	37,1185	
	3	0,697	0,042	0,013	50,3846	1	50,3846	45,3462	0,3377	45,6838	36,5471	
	4	0,753	0,042	0,013	54,6923	1	54,6923	49,2231	0,3808	49,6038	39,6831	
	5	0,449	0,042	0,013	31,3077	2,5	78,2692	70,4423	0,4392	70,8815	56,7052	
	6	0,693	0,042	0,013	50,0769	1	50,0769	45,0692	0,3042	45,3735	36,2988	
30	1	0,412	0,042	0,013	28,4615	2,5	71,1538	64,0385	0,5581	64,5965	51,6772	57,2301
	2	0,403	0,042	0,013	27,7692	2,5	69,4231	62,4808	0,6154	63,0962	50,4769	
	3	0,353	0,042	0,013	23,9231	2,5	59,8077	53,8269	0,5896	54,4165	43,5332	

	4	0,389	0,042	0,013	26,6923	2,5	66,7308	60,0577	0,6542	60,7119	48,5695	
	5	0,719	0,042	0,013	52,0769	2,5	130,1923	117,1731	0,8306	118,0037	94,4029	
	6	0,434	0,042	0,013	30,1538	2,5	75,3846	67,8462	0,5546	68,4008	54,7206	
45	1	0,513	0,042	0,013	36,2308	2,5	90,5769	81,5192	0,9138	82,4331	65,9465	69,0606
	2	0,410	0,042	0,013	28,3077	2,5	70,7692	63,6923	0,9625	64,6548	51,7238	
	3	0,406	0,042	0,013	28,0000	2,5	70,0000	63,0000	0,8887	63,8887	51,1109	
	4	0,445	0,042	0,013	31,0000	2,5	77,5000	69,7500	0,9879	70,7379	56,5903	
	5	0,485	0,042	0,013	34,0769	5	170,3846	153,3462	1,4815	154,8277	123,8622	
	6	0,507	0,042	0,013	35,7692	2,5	89,4231	80,4808	0,9315	81,4123	65,1298	
60	1	0,667	0,042	0,013	48,0769	2,5	120,1923	108,1731	1,3667	109,5398	87,6318	78,9474
	2	0,437	0,042	0,013	30,3846	2,5	75,9615	68,3654	1,3163	69,6817	55,7454	
	3	0,439	0,042	0,013	30,5385	2,5	76,3462	68,7115	1,2387	69,9502	55,9602	
	4	0,525	0,042	0,013	37,1538	2,5	92,8846	83,5962	1,3754	84,9715	67,9772	
	5	0,491	0,042	0,013	34,5385	5	172,6923	155,4231	2,3335	157,7565	126,2052	
	6	0,613	0,042	0,013	43,9231	2,5	109,8077	98,8269	1,3787	100,2056	80,1645	
90	1	0,461	0,042	0,013	32,2308	5	161,1538	145,0385	1,9677	147,0062	117,6049	99,5947
	2	0,470	0,042	0,013	32,9231	2,5	82,3077	74,0769	1,6962	75,7731	60,6185	
	3	0,515	0,042	0,013	36,3846	2,5	90,9615	81,8654	1,6204	83,4858	66,7886	
	4	0,736	0,042	0,013	53,3846	2,5	133,4615	120,1154	1,8398	121,9552	97,5642	
	5	0,598	0,042	0,013	42,7692	5	213,8462	192,4615	3,1969	195,6585	156,5268	
	6	0,742	0,042	0,013	53,8462	2,5	134,6154	121,1538	1,9277	123,0815	98,4652	
120	1	0,484	0,042	0,013	34,0000	5	170,0000	153,0000	2,7735	155,7735	124,6188	137,5845
	2	0,397	0,042	0,013	27,3077	5	136,5385	122,8846	2,1077	124,9923	99,9938	
	3	0,692	0,042	0,013	50,0000	5	250,0000	225,0000	2,0752	227,0752	181,6602	
	4	0,453	0,042	0,013	31,6154	5	158,0769	142,2692	2,5071	144,7763	115,8211	

5	0,702	0,042	0,013	50,7692	5	253,8462	228,4615	4,2662	232,7277	186,1822
6	0,411	0,042	0,013	28,3846	5	141,9231	127,7308	2,6008	130,3315	104,2652

Lampiran 12. Perhitungan DE_{30} Suppositoria Ibuprofen

Formula	Sampel	DE_{30} (%)		
		Bets 1	**Bets 2**	**Bets 3**
FA	1	23,0175	19,9122	22,2258
	2	23,2221	21,2769	19,1391
	3	23,0484	21,1448	19,1968
	4	23,9574	21,0378	18,9369
	5	23,3344	17,2940	20,2293
	6	22,0111	22,9899	21,8991
	Rata-rata	**23,0985 ± 0,6325**	**20,6093 ± 0,9006**	**20,2712 ± 0,4621**
FB	1	28,5505	26,2672	27,4206
	2	27,7561	28,7874	27,5112
	3	24,0160	25,8686	27,3098
	4	24,1129	28,6846	28,3359
	5	24,4629	29,1175	28,1856
	6	24,8315	26,1519	28,4588
	Rata-rata	**25,6217 ± 0,9978**	**27,4795 ± 0,5279**	**27,8703 ± 0,5115**
FC	1	43,4996	31,5196	32,4496
	2	31,3584	30,2136	33,6436
	3	30,7608	37,9479	31,1889
	4	31,2569	39,3781	34,5301
	5	32,7993	33,0363	53,0663
	6	36,9007	32,5684	33,0972
	Rata-rata	**34,4293 ± 0,9797**	**34,1107 ± 0,6852**	**36,3293 ± 0,2765**

a. Contoh perhitungan uji disolusi

Hasil absorbansi uji disolusi formula A bets 1 menit ke 10 (vesel 1) adalah 0,414. Persamaan regresi linier dari kurva baku ibuprofen dengan pelarut dapar fosfat pH 7,4 ± 0,1 yaitu: Y = 0,013x + 0,042

- Kadar sebelum pengenceran

$$y = 0{,}013x + 0{,}042$$

$$0{,}414 = 0{,}013x + 0{,}042$$

$$x = 28{,}6154$$

- Kadar setelah pengenceran

$$\text{Kadar} = \text{kadar terbaca x faktor pengenceran}$$

$$= 28{,}6154 \text{ x } 1$$

$$= 28{,}6154 \text{ mg/L}$$

- Kadar dalam 900 mL medium (1 vessel)

$$\text{Kadar} = (\text{volume 1 vessel} : 1000 \text{ ml}) \text{ x kadar}$$

$$= (900 \text{ mL} : 1000) \text{ x } 28{,}6154 \text{ mg/L}$$

$$= 25{,}7538 \text{ mg}$$

Pengambilan sampel untuk 1 vessel yaitu sebanyak 5 ml dan diganti dengan medium dapar fosfat pH 7,4 ± 0,1 dengan volume yang sama (5 ml) sehingga terjadi pengurangan kadar. Oleh karena itu, kadar dalam 900 ml medium perlu ditambahkan dengan faktor koreksi dari menit sebelumnya agar kadarnya tetap menggambarkan keadaan sesungguhnya.

$$\text{Faktor koreksi} =$$

$$(\text{Kadar terbaca x FP x vol. pengambilan sampel}) + \text{FK menit sebelumnya}$$

$$= (28{,}6154 \text{ mg/L x } 0{,}005 \text{ L}) + 0{,}000 \text{ mg}$$

$$= 0{,}1135 \text{ mg}$$

Kadar sesungguhnya = Kadar dalam 900 ml + faktor koreksi

$= 25{,}7538 \text{ mg} + 0{,}1135 \text{ mg}$

$= 25{,}8673 \text{ mg}$

Persen kumulatif pelepasan obat(%) = (Kadar ibuprofen : dosis) x 100%

$= (25{,}8673 \text{ mg} : 125 \text{ mg}) \text{ x } 100\%$

$= 20{,}6938\ \%$

a. Contoh perhitungan DE_{30} supositoria ibuprofen

Pada perhitungan DE_{30} digunakan data persen terdisolusi formula A bets 1 menit ke 5 sampai 30 (vessel 1). Perhitungan luas daerah dibawah kurva dihitung dengan metode trapezoid (menghitung potongan-potongan trapesium).

- Perhitungan luas daerah bawah kurva (AUC):

$$AUC_1^0 = \frac{a \text{ x } t}{2}$$

$$= \frac{5 \text{ x } 16{,}3385}{2}$$

$$= 40{,}8462$$

$$AUC_2^1 = \frac{\text{Jumlah sisi sejajar x t}}{2}$$

$$= \frac{(20{,}6938 + 16{,}3385) \text{ x } (10 - 5)}{2}$$

$$= 92{,}5808$$

$$AUC_3^2 = \frac{\text{Jumlah sisi sejajar x t}}{2}$$

$$= \frac{(26{,}5129 + 20{,}6938) \text{ x } (15 - 10)}{2}$$

$$= 118{,}0169$$

$$AUC_4^3 = \frac{\text{Jumlah sisi sejajar x t}}{2}$$

$$= \frac{(32{,}0314 + 26{,}5129) \text{ x } (30 - 15)}{2}$$

$$= 439{,}0823$$

$$\sum \text{AUC} = \text{AUC}_1^0 + \text{AUC}_2^1 + \text{AUC}_3^2 + \text{AUC}_4^3$$

$$= 40{,}8462 + 92{,}5808 + 118{,}0169 + 439{,}0823$$

$$= 690{,}5262$$

- Perhitungan DE30

$$\text{DE}_t(\%) = \int_0^t \frac{\text{y.dt}}{\text{y100.t}} \text{ x } 100\%$$

$$= \frac{\sum \text{AUC}}{\text{y100 x t}} \text{ x } 100\%$$

$$= \frac{690{,}5262}{100 \text{ x } 30} \text{ x } 100\%$$

$$= 23{,}0175\ \%$$

Lampiran 13. Analisis Statistik Pelepasan Ibuprofen

a. Persen Terdisolusi

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Persen Terdisolusi Menit ke 30	FA	,182	18	,118	,921	18	,133
	FB	,082	18	,200*	,973	18	,847
	FC	,238	18	,008	,828	18	,004

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

a. Lilliefors Significance Correction

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
TransPT	FA	,172	18	,170	,923	18	,146
	FB	,094	18	,200*	,966	18	,729
	FC	,196	18	,066	,894	18	,046

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

a. Lilliefors Significance Correction

Uji Homogenitas Varian

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Persen Terdisolusi Menit ke 30	Based on Mean	10,646	2	51	,000

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
TransPT	Based on Mean	5,475	2	51	,007

Uji *Kruskal-Wallis*

Test Statistics[a,b]

	TransPT
Chi-Square	41,031
df	2
Asymp. Sig.	,000

a. Kruskal Wallis Test

b. Grouping Variable: Formula

Uji *Mann-Whitney*

- FA terhadap FB

Test Statistics[a]

	TransPT
Mann-Whitney U	29,000
Wilcoxon W	200,000
Z	-4,208
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FA terhadap FC

Test Statistics[a]

	TransPT
Mann-Whitney U	1,000
Wilcoxon W	172,000
Z	-5,094
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FB terhadap FC

Test Statistics[a]

	TransPT
Mann-Whitney U	13,000
Wilcoxon W	184,000
Z	-4,714
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

b. Efisiensi Disolusi Menit ke 30

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Efisiensi Disolusi Menit ke 30	FA	,147	18	,200*	,944	18	,335
	FB	,185	18	,106	,893	18	,044
	FC	,258	18	,003	,734	18	,000

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

a. Lilliefors Significance Correction

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
TransDE	FA	,143	18	,200*	,933	18	,218
	FB	,195	18	,069	,886	18	,033
	FC	,243	18	,006	,790	18	,001

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

a. Lilliefors Significance Correction

Uji Homogenitas Varian

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Efisiensi Disolusi Menit ke 30	Based on Mean	6,558	2	51	,003

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
TransDE	Based on Mean	2,723	2	51	,075

Uji *Kruskal-Wallis*

Test Statistics[a,b]

	TransDE
Chi-Square	47,127
df	2
Asymp. Sig.	,000

a. Kruskal Wallis Test

b. Grouping Variable: Formula

Uji *Mann-Whitney*

- FA terhadap FB

Test Statistics[a]

	TransDE
Mann-Whitney U	,000
Wilcoxon W	171,000
Z	-5,125
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FA terhadap FC

Test Statistics[a]

	TransDE
Mann-Whitney U	,000
Wilcoxon W	171,000
Z	-5,125
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FB terhadap FC

Test Statistics[a]

	TransDE
Mann-Whitney U	,000
Wilcoxon W	171,000
Z	-5,125
Asymp. Sig. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

c. Waktu Leleh

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Waktu Leleh	FA	,218	9	,200*	,934	9	,516
	FB	,181	9	,200*	,862	9	,100
	FC	,132	9	,200*	,951	9	,704

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

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Waktu Leleh	Based on Mean	9,170	2	24	,001

Uji *Kruskal-Wallis*

Test Statistics[a,b]

	Waktu Leleh
Chi-Square	11,019
df	2
Asymp. Sig.	,004

a. Kruskal Wallis Test

b. Grouping Variable: Formula

Uji *Mann-Whitney*

- FA terhadap FB

Test Statistics[a]

	Waktu Leleh
Mann-Whitney U	7,500
Wilcoxon W	52,500
Z	-2,915
Asymp. Sig. (2-tailed)	,004
Exact Sig. [2*(1-tailed Sig.)]	,002[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FA terhadap FC

Test Statistics[a]

	Waktu Leleh
Mann-Whitney U	10,000
Wilcoxon W	55,000
Z	-2,693
Asymp. Sig. (2-tailed)	,007
Exact Sig. [2*(1-tailed Sig.)]	,006[b]

a. Grouping Variable: Formula

b. Not corrected for ties.

- FB terhadap FC

Test Statistics[a]

	Waktu Leleh
Mann-Whitney U	10,000
Wilcoxon W	55,000
Z	-2,693
Asymp. Sig. (2-tailed)	,007
Exact Sig. [2*(1-tailed Sig.)]	,006[b]

a. Grouping Variable: Formula

b. Not corrected for ties.