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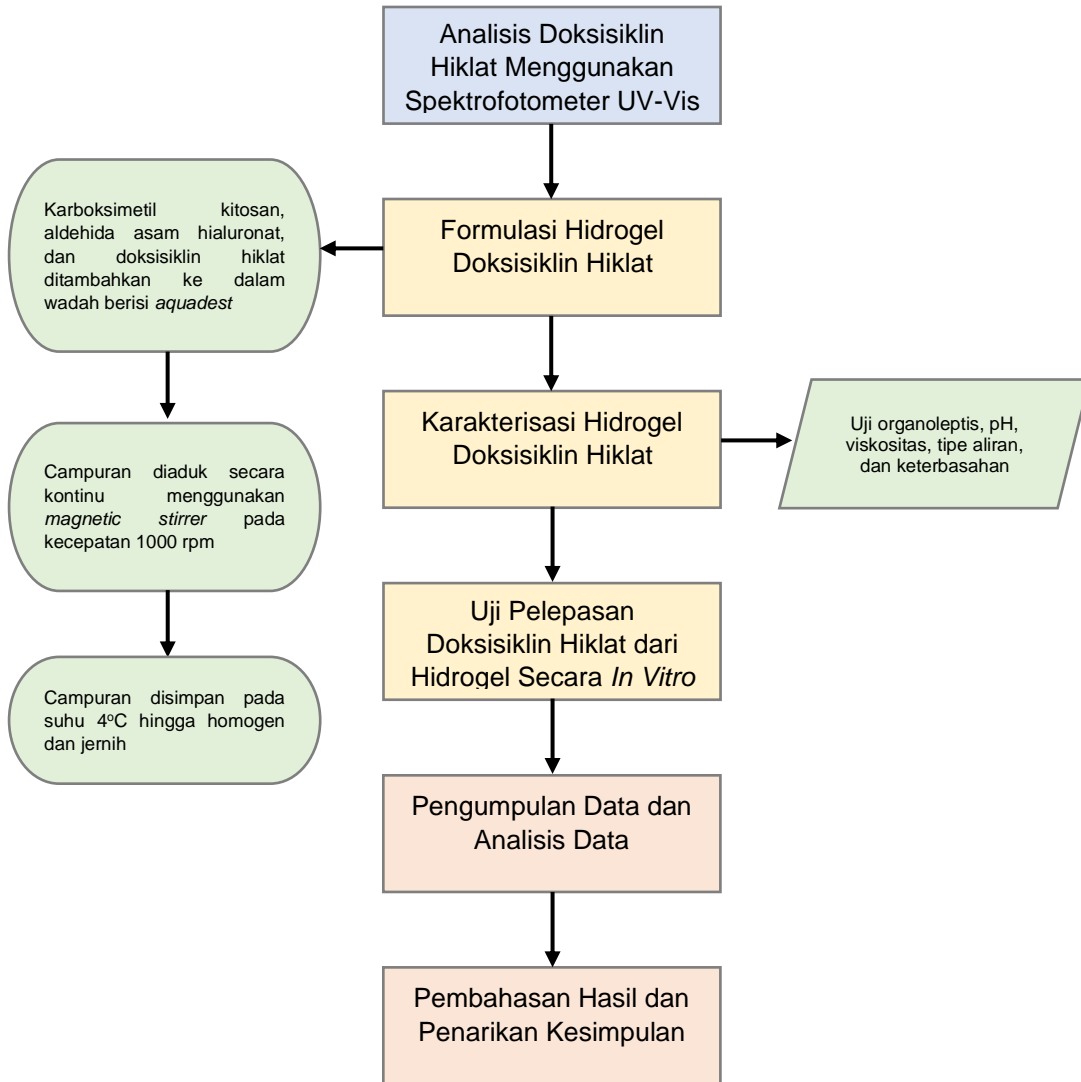
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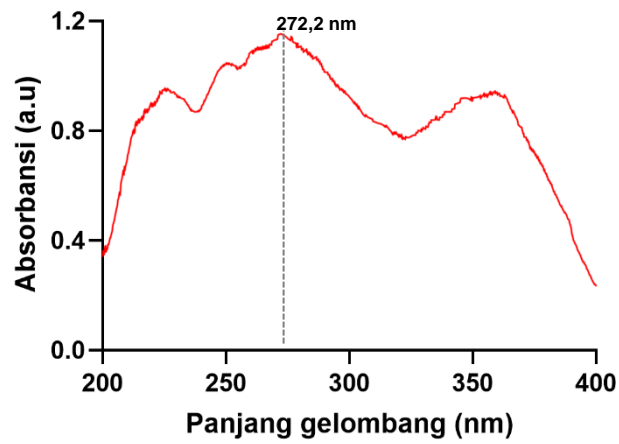
LAMPIRAN

Lampiran 1. Skema Kerja Penelitian



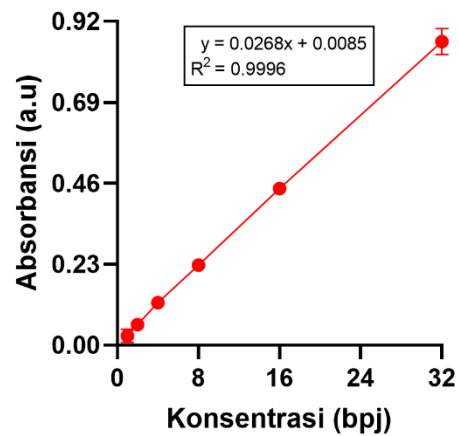
Lampiran 2. Panjang Gelombang Maksimum dan Kurva Baku

Lampiran 2.1 Panjang Gelombang Maksimum Doksisisiklin Hiklat



Gambar 18. Panjang Gelombang Maksimum Doksisisiklin Hiklat dalam PBS pH 7,4

Lampiran 2.2 Kurva Baku Doksisisiklin Hiklat dalam PBS pH 7,4



Gambar 19. Kurva Baku Doksisisiklin Hiklat dalam PBS pH 7,4

Lampiran 3. Perhitungan

Persamaan kurva baku doksisisiklin hiklat dalam PBS pH 7,4:

$$y = 0,0268x + 0,0085$$

Dimana x = konsentrasi dan y = serapan atau absorbansi.

Dari hasil uji pelepasan F2 pada replikasi 1 jam ke-24, diperoleh y = 0,633, sehingga:

$$x = \frac{0,633 - 0,0085}{0,0268} = 23,302 \mu\text{g/mL}$$

$$\begin{aligned} \text{Konsentrasi dalam 1 mL} &= 23,302 \mu\text{g/mL} \times 1 \text{ mL} \\ &= 23,302 \mu\text{g} \\ &= 0,023 \text{ mg} \end{aligned}$$

$$\begin{aligned} \text{Konsentrasi dalam 100 mL} &= 23,302 \mu\text{g/mL} \times 4 \times 100 \text{ mL} \\ &= 9320,896 \mu\text{g} \\ &= 9,321 \text{ mg} \end{aligned}$$

$$\begin{aligned} \text{Faktor koreksi} &= \frac{\text{konsentrasi jam sebelumnya}}{1000} + \text{faktor koreksi jam sebelumnya} \\ &= \frac{20,392 \mu\text{g}}{1000} + 0,221 \text{ mg} \\ &= 0,241 \text{ mg} \end{aligned}$$

$$\begin{aligned} \text{Jumlah obat yang terlepas} &= \text{konsentrasi dalam 100 mL} + \text{faktor koreksi} \\ &= 9,321 \text{ mg} + 0,241 \text{ mg} \\ &= 9,562 \text{ mg} \end{aligned}$$

Jadi, jumlah doksisisiklin yang terlepas dari F2 pada replikasi jam ke-24 secara *in vitro*, yaitu 9,562 mg.

Lampiran 4. Tabel Hasil Penelitian

Lampiran 4.1 Tabel Kurva Baku Doksisisiklin Hiklat dalam PBS pH 7,4

Konsentrasi (bpj)	Serapan (a.u)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
32	0,904	0,833	0,852	0,863	0,037
16	0,458	0,424	0,453	0,445	0,018
8	0,246	0,211	0,226	0,228	0,018
4	0,131	0,102	0,130	0,121	0,016
2	0,066	0,045	0,066	0,059	0,012
1	0,041	0,006	0,034	0,027	0,018

Lampiran 4.2 Tabel Hasil Pengukuran pH

Formula	pH			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
F1	4,48	4,44	4,43	4,45	0,026
F2	4,64	4,63	4,74	4,67	0,061
F3	4,80	4,86	4,92	4,86	0,060

Lampiran 4.3 Tabel Hasil Pengukuran Viskositas

Formula	Viskositas (Pa.s)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
F1	3,7	3,5	3,8	3,67	0,153
F2	35,6	37,2	36,4	36,40	0,800
F3	67,6	69,2	70,0	68,93	1,222

Lampiran 4.4 Tabel Hasil Penentuan Tipe Aliran

F1

Kecepatan (rpm)	Viskositas (Pa.s)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
5	5,00	6,00	5,00	5,333	0,577
10	4,50	5,00	4,50	4,667	0,289
20	4,25	4,50	4,25	4,333	0,144
50	3,70	3,50	3,80	3,667	0,153
100	3,30	3,20	3,45	3,317	0,126

F2

Kecepatan (rpm)	Viskositas (Pa.s)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
5	52,0	64,0	64,0	60	6,928
10	48,0	60,0	60,0	56	6,928
20	33,0	51,0	51,0	45	10,392
50	35,6	37,2	36,4	36,4	0,8
100	23,4	23,2	22,2	22,933	0,643

F3

Kecepatan (rpm)	Viskositas (Pa.s)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
5	312	296	328	312	16
10	222	226	222	223,333	2,309
20	133	131	137	133,667	3,055
50	67,6	69,2	70	68,933	1,222
100	39,8	39,4	39,6	39,6	0,2

Lampiran 4.5 Tabel Hasil Uji Keterbasahan

Formula	Waktu Minimum (Detik)			Rata-Rata	SD
	Replikasi 1	Replikasi 2	Replikasi 3		
F1	31	35	39	35	4
F2	40	44	42	42	2
F3	58	62	60	60	2

Lampiran 4.6 Tabel Hasil Uji Pelepasan Obat Secara *In Vitro*

F1

Waktu (Jam)	Serapan	Konsentrasi (µg/mL)	1 mL (µg)	Faktor Pengenceran	100 mL (mg)	Faktor Koreksi	Doksisiklin Hiklat yang Terlepas (mg)	Rata-Rata	SD
0,25	0,477	17,481	17,481	2	3,496	0	3,496	3,685	0,177
	0,524	19,235	19,235	2	3,847	0	3,847		
	0,506	18,563	18,563	2	3,713	0	3,713		
0,5	0,604	22,220	22,220	2	4,444	0,017	4,462	4,542	0,087
	0,627	23,078	23,078	2	4,616	0,019	4,635		
	0,613	22,556	22,556	2	4,511	0,019	4,530		
0,75	0,325	11,810	11,810	4	4,724	0,040	4,764	4,740	0,187
	0,31	11,250	11,250	4	4,500	0,042	4,542		
	0,335	12,183	12,183	4	4,873	0,041	4,914		
1	0,348	12,668	12,668	4	5,067	0,052	5,119	4,946	0,341
	0,351	12,780	12,780	4	5,112	0,054	5,166		
	0,31	11,250	11,250	4	4,500	0,053	4,553		
2	0,429	15,690	15,690	4	6,276	0,064	6,340	6,291	0,128
	0,432	15,802	15,802	4	6,321	0,066	6,387		
	0,416	15,205	15,205	4	6,082	0,065	6,147		
3	0,501	18,377	18,377	4	7,351	0,080	7,431	7,242	0,254
	0,495	18,153	18,153	4	7,261	0,082	7,343		
	0,469	17,183	17,183	4	6,873	0,080	6,953		
4	0,542	19,907	19,907	4	7,963	0,098	8,061	7,867	0,221
	0,532	19,534	19,534	4	7,813	0,100	7,914		
	0,513	18,825	18,825	4	7,530	0,097	7,627		
5	0,55	20,205	20,205	4	8,082	0,118	8,200	8,121	0,103
	0,547	20,093	20,093	4	8,037	0,120	8,157		
	0,537	19,720	19,720	4	7,888	0,116	8,004		
6	0,555	20,392	20,392	4	8,157	0,138	8,295	8,270	0,235
	0,568	20,877	20,877	4	8,351	0,140	8,491		

	0,537	19,720	19,720	4	7,888	0,135	8,024		
7	0,559	20,541	20,541	4	8,216	0,159	8,375	8,320	0,069
	0,55	20,205	20,205	4	8,082	0,161	8,243		
	0,557	20,466	20,466	4	8,187	0,155	8,342		
8	0,567	20,840	20,840	4	8,336	0,179	8,515	8,425	0,079
	0,557	20,466	20,466	4	8,187	0,181	8,368		
	0,559	20,541	20,541	4	8,216	0,176	8,392		
24	0,653	24,049	24,049	4	9,619	0,200	9,820	9,998	0,158
	0,673	24,795	24,795	4	9,918	0,201	10,119		
	0,669	24,646	24,646	4	9,858	0,196	10,054		

F2

Waktu (Jam)	Serapan	Konsentrasi ($\mu\text{g/mL}$)	1 mL (μg)	Faktor Pengenceran	100 mL (mg)	Faktor Koreksi	Doksisiklin Hiklat yang Terlepas (mg)	Rata-Rata	SD
0,25	0,519	19,049	19,049	1	1,905	0	1,905	1,757	0,128
	0,461	16,884	16,884	1	1,688	0	1,688		
	0,458	16,772	16,772	1	1,677	0	1,677		
0,5	0,843	31,138	31,138	1	3,114	0,019	3,133	3,100	0,035
	0,836	30,877	30,877	1	3,088	0,017	3,105		
	0,825	30,466	30,466	1	3,047	0,017	3,063		
0,75	0,569	20,914	20,914	2	4,183	0,050	4,233	3,987	0,213
	0,521	19,123	19,123	2	3,825	0,048	3,872		
	0,519	19,049	19,049	2	3,810	0,047	3,857		
1	0,776	28,638	28,638	2	5,728	0,071	5,799	4,796	0,890
	0,601	22,108	22,108	2	4,422	0,067	4,489		
	0,549	20,168	20,168	2	4,034	0,066	4,100		
2	0,784	28,937	28,937	2	5,787	0,100	5,887	5,837	0,051
	0,779	28,750	28,750	2	5,750	0,089	5,839		
	0,772	28,489	28,489	2	5,698	0,086	5,784		
3	0,448	16,399	16,399	4	6,560	0,129	6,688	6,615	0,067

	0,44	16,101	16,101	4	6,440	0,118	6,558		
	0,443	16,213	16,213	4	6,485	0,115	6,600		
4	0,481	17,631	17,631	4	7,052	0,145	7,197	7,079	0,112
	0,473	17,332	17,332	4	6,933	0,134	7,067		
	0,467	17,108	17,108	4	6,843	0,131	6,974		
	0,512	18,787	18,787	4	7,515	0,163	7,678		
5	0,483	17,705	17,705	4	7,082	0,151	7,233	7,555	0,281
	0,518	19,011	19,011	4	7,604	0,148	7,753		
	0,523	19,198	19,198	4	7,679	0,181	7,861		
6	0,517	18,974	18,974	4	7,590	0,169	7,758	7,802	0,053
	0,519	19,049	19,049	4	7,619	0,167	7,787		
	0,539	19,795	19,795	4	7,918	0,201	8,119		
7	0,541	19,869	19,869	4	7,948	0,188	8,136	8,115	0,023
	0,538	19,757	19,757	4	7,903	0,186	8,089		
	0,555	20,392	20,392	4	8,157	0,220	8,377		
8	0,552	20,280	20,280	4	8,112	0,208	8,320	8,328	0,045
	0,55	20,205	20,205	4	8,082	0,206	8,288		
	0,633	23,302	23,302	4	9,321	0,241	9,562		
24	0,641	23,601	23,601	4	9,440	0,228	9,668	9,642	0,071
	0,643	23,675	23,675	4	9,470	0,226	9,696		

F3

Waktu (Jam)	Serapan	Konsentrasi ($\mu\text{g/mL}$)	1 mL (μg)	Faktor Pengenceran	100 mL (mg)	Faktor Koreksi	Doksisiklin Hiklat yang Terlepas (mg)	Rata-Rata	SD
0,25	0,433	15,840	15,840	1	1,584	0	1,584	1,631	0,105
	0,478	17,519	17,519	1	1,752	0	1,752		
	0,426	15,578	15,578	1	1,558	0	1,558		
0,5	0,341	12,407	12,407	2	2,481	0,016	2,497	2,532	0,032
	0,349	12,705	12,705	2	2,541	0,018	2,559		
	0,347	12,631	12,631	2	2,526	0,016	2,542		

0,75	0,398	14,534	14,534	2	2,907	0,028	2,935	3,276	0,541
	0,527	19,347	19,347	2	3,869	0,030	3,900		
	0,406	14,832	14,832	2	2,966	0,028	2,995		
1	0,532	19,534	19,534	2	3,907	0,043	3,949	4,041	0,080
	0,55	20,205	20,205	2	4,041	0,050	4,091		
	0,55	20,205	20,205	2	4,041	0,043	4,084		
2	0,637	23,451	23,451	2	4,690	0,062	4,753	5,066	0,294
	0,714	26,325	26,325	2	5,265	0,070	5,335		
	0,685	25,243	25,243	2	5,049	0,063	5,112		
3	0,391	14,272	14,272	4	5,709	0,086	5,795	5,953	0,151
	0,402	14,683	14,683	4	5,873	0,096	5,969		
	0,411	15,019	15,019	4	6,007	0,088	6,096		
4	0,428	15,653	15,653	4	6,261	0,100	6,361	6,590	0,226
	0,443	16,213	16,213	4	6,485	0,111	6,596		
	0,458	16,772	16,772	4	6,709	0,104	6,812		
5	0,464	16,996	16,996	4	6,799	0,116	6,914	7,009	0,235
	0,458	16,772	16,772	4	6,709	0,127	6,836		
	0,488	17,892	17,892	4	7,157	0,120	7,277		
6	0,489	17,929	17,929	4	7,172	0,133	7,304	7,380	0,323
	0,517	18,974	18,974	4	7,590	0,144	7,733		
	0,475	17,407	17,407	4	6,963	0,138	7,101		
7	0,522	19,160	19,160	4	7,664	0,151	7,815	7,865	0,117
	0,519	19,049	19,049	4	7,619	0,163	7,782		
	0,534	19,608	19,608	4	7,843	0,156	7,999		
8	0,551	20,243	20,243	4	8,097	0,170	8,267	8,064	0,324
	0,548	20,131	20,131	4	8,052	0,182	8,234		
	0,512	18,787	18,787	4	7,515	0,175	7,690		
24	0,631	23,228	23,228	4	9,291	0,190	9,481	9,377	0,106
	0,616	22,668	22,668	4	9,067	0,202	9,269		
	0,624	22,966	22,966	4	9,187	0,194	9,381		

Lampiran 4.7 Tabel Nilai Rsqr Kinetika Pelepasan Obat Secara *In Vitro*

Formula	Nilai Rsqr Model Kinetika Pelepasan Obat				
	<i>Zero Order</i>	<i>First Order</i>	<i>Higuchi</i>	<i>Korsmeyer-Peppas</i>	<i>Hixson Crowell</i>
F1	-4,6937	0,4738	-0,2984	0,9494 *	-0,6694
F2	-2,1397	0,6411	0,4097	0,8409 *	0,3136
F3	-1,4083	0,7608	0,6188	0,8468 *	0,5483

*Nilai Rsqr mendekati 1 dipilih sebagai model kinetika pelepasan obat secara *in vitro*

*Daftar nilai n:

n F1: 0,235

n F2: 0,223

n F3: 0,392

Lampiran 5. Data Hasil Analisis Statistika

Lampiran 5.1 Pengukuran pH

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pH	Formula 1	.314	3	.	.893	3	.363
	Formula 2	.356	3	.	.818	3	.157
	Formula 3	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

ANOVA

pH					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.253	2	.126	47.362	.000
Within Groups	.016	6	.003		
Total	.269	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: pH

	(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	Formula 1	Formula 2	-.22000*	.04216	.005	-.3494
		Formula 3	-.41000*	.04216	.000	-.5394
	Formula 2	Formula 1	.22000*	.04216	.005	.0906
		Formula 3	-.19000*	.04216	.010	-.3194

Formula 3	Formula 1	.41000*	.04216	.000	.2806
	Formula 2	.19000*	.04216	.010	.0606

Multiple Comparisons

Dependent Variable: pH

	(I) Formula	(J) Formula	95% Confidence Interval Upper Bound
Tukey HSD	Formula 1	Formula 2	-.0906
		Formula 3	-.2806
	Formula 2	Formula 1	.3494
		Formula 3	-.0606
	Formula 3	Formula 1	.5394
		Formula 2	.3194

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

Lampiran 5.2 Pengukuran Viskositas

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Formula 1	.253	3	.	.964	3	.637
Viskositas Formula 2	.175	3	.	1.000	3	1.000
Formula 3	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

ANOVA

Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6993.167	2	3496.583	2678.234	.000
Within Groups	7.833	6	1.306		
Total	7001.000	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Viskositas

	(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	Formula 1	Formula 2	-27.16667*	.93294	.000	-30.0292
		Formula 3	-67.83333*	.93294	.000	-70.6958
	Formula 2	Formula 1	27.16667*	.93294	.000	24.3042

	Formula 3	-40.66667*	.93294	.000	-43.5292
Formula 3	Formula 1	67.83333*	.93294	.000	64.9708
	Formula 2	40.66667*	.93294	.000	37.8042

Multiple Comparisons

Dependent Variable: Viskositas

	(I) Formula	(J) Formula	95% Confidence Interval Upper Bound
Tukey HSD	Formula 1	Formula 2	-24.3042
		Formula 3	-64.9708
	Formula 2	Formula 1	30.0292
		Formula 3	-37.8042
	Formula 3	Formula 1	70.6958
		Formula 2	43.5292

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

Lampiran 5.3 Uji Keterbasahan

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Formula 1	.175	3	.	1.000	3	1.000
Waktu Formula 2	.175	3	.	1.000	3	1.000
Formula 3	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

ANOVA

Waktu

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	998.000	2	499.000	62.375	.000
Within Groups	48.000	6	8.000		
Total	1046.000	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Waktu

	(I) Formula	(J) Formula	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	Formula 1	Formula 2	-7.00000	2.30940	.052	-14.0859
		Formula 3	-25.00000*	2.30940	.000	-32.0859
	Formula 2	Formula 1	7.00000	2.30940	.052	-.0859
		Formula 3	-18.00000*	2.30940	.001	-25.0859
	Formula 3	Formula 1	25.00000*	2.30940	.000	17.9141

Formula 2	18.00000*	2.30940	.001	10.9141
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Multiple Comparisons

Dependent Variable: Waktu

	(I) Formula	(J) Formula	95% Confidence Interval Upper Bound
Tukey HSD	Formula 1	Formula 2	.0859
		Formula 3	-17.9141
	Formula 2	Formula 1	14.0859
		Formula 3	-10.9141
	Formula 3	Formula 1	32.0859
		Formula 2	25.0859

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

Lampiran 5.4 Uji Pelepasan Obat Secara *In Vitro*

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi Obat	Formula 1	.307	3	.	.903	3	.396
	Formula 2	.310	3	.	.898	3	.381
	Formula 3	.180	3	.	.999	3	.943

a. Lilliefors Significance Correction

ANOVA

Konsentrasi_Obat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.232	2	29.116	21.215	.002
Within Groups	8.235	6	1.372		
Total	66.467	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Konsentrasi_Obat

	(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	Formula 1	Formula 2	3.55609*	.95654	.023	.6212
		Formula 3	6.20883*	.95654	.002	3.2739
	Formula 2	Formula 1	-3.55609*	.95654	.023	-6.4910
		Formula 3	2.65274	.95654	.072	-.2822
	Formula 3	Formula 1	-6.20883*	.95654	.002	-9.1437

Formula 2	-2.65274	.95654	.072	-5.5876
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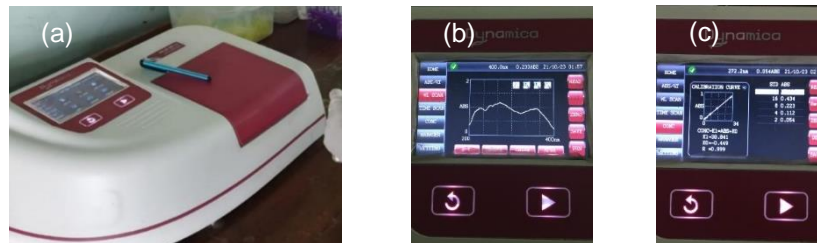
Multiple Comparisons

Dependent Variable: Konsentrasi_Obat

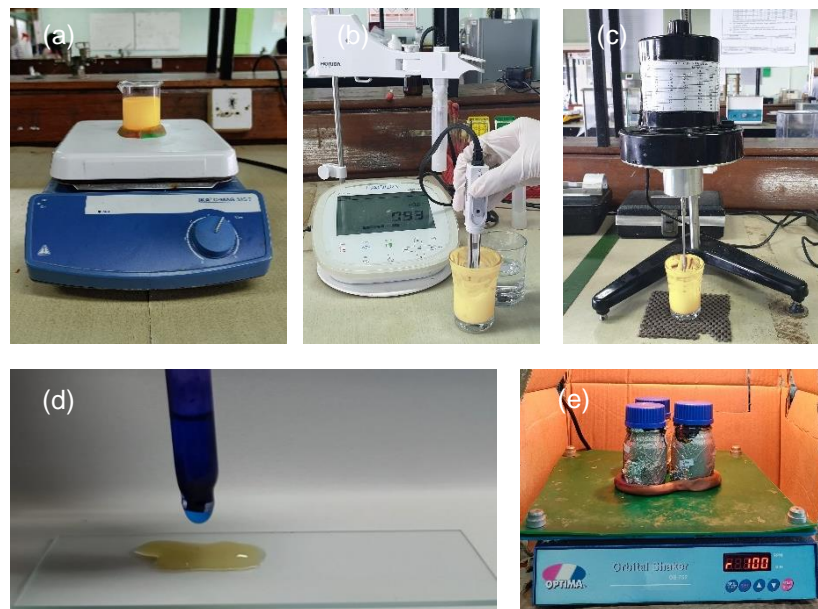
	(I) Formula	(J) Formula	95% Confidence Interval Upper Bound
Tukey HSD	Formula 1	Formula 2	6.4910
		Formula 3	9.1437
	Formula 2	Formula 1	-.6212
		Formula 3	5.5876
	Formula 3	Formula 1	-3.2739
		Formula 2	.2822

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

Lampiran 6. Dokumentasi Penelitian



Gambar 20. Analisis Doksisisiklin Hiklat dengan Spektrofotometer UV-Vis: (a) Spektrofotometer UV-Vis, (b) Panjang Gelombang Maksimum, dan (c) Kurva Baku Doksisisiklin Hiklat



Gambar 21. Formulasi dan Karakterisasi Hidrogel Doksisisiklin Hiklat: (a) Formulasi Hidrogel, (b) Pengukuran pH, (c) Pengukuran Viskositas, (d) Uji Sifat Keterbasahan, dan (e) Uji Pelepasan Obat Secara *In Vitro*