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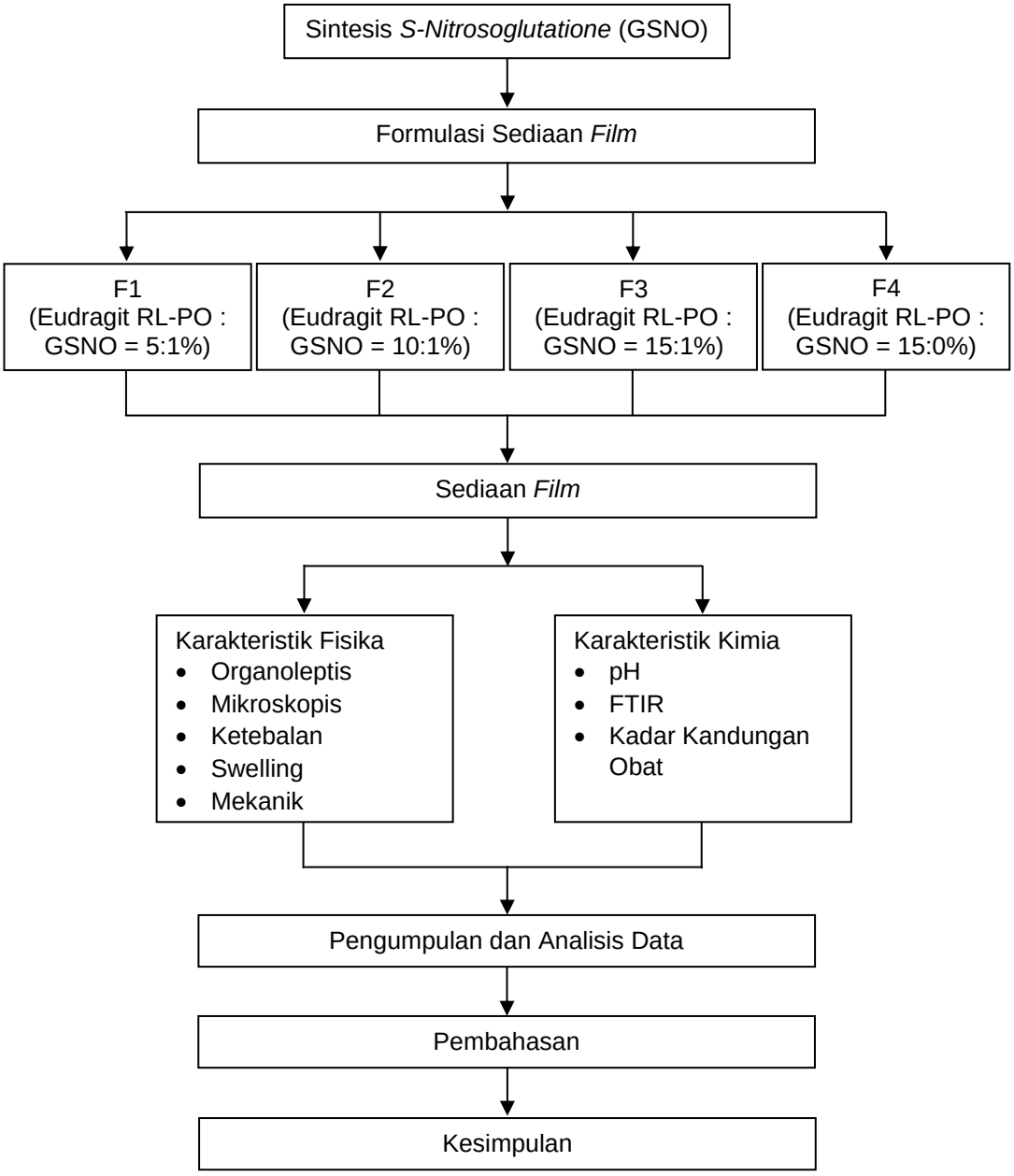
LAMPIRAN

Lampiran 1. Skema Kerja Umum Penelitian



Lampiran 2. Hasil Uji pH Sediaan *Film* GSNO

Tabel 5. Hasil uji pH sediaan *film* GSNO

Formula	pH	Rata-rata + SD
F1	5,88	5,72 ± 0,16
	5,57	
	5,70	
F2	5,85	5,86 ± 0,09
	5,77	
	5,95	
F3	5,80	5,68 ± 0,32
	5,31	
	5,92	
F4	5,68	5,66 ± 0,05
	5,70	
	5,61	

Lampiran 3. Hasil Uji Ketebalan Sediaan *Film* GSNO

Tabel 6. Hasil uji ketebalan sediaan *film* GSNO

Formula	Ketebalan (mm)	Rata-rata ± SD (mm)
F1	0,56	0,58 ± 0,02
	0,60	
	0,58	
F2	0,75	0,76 ± 0,02
	0,76	
	0,78	
F3	0,97	0,97 ± 0,02
	0,95	
	0,98	
F4	0,94	0,95 ± 0,02
	0,97	
	0,95	

Lampiran 4. Hasil Uji Swelling Sediaan *Film* GSNO

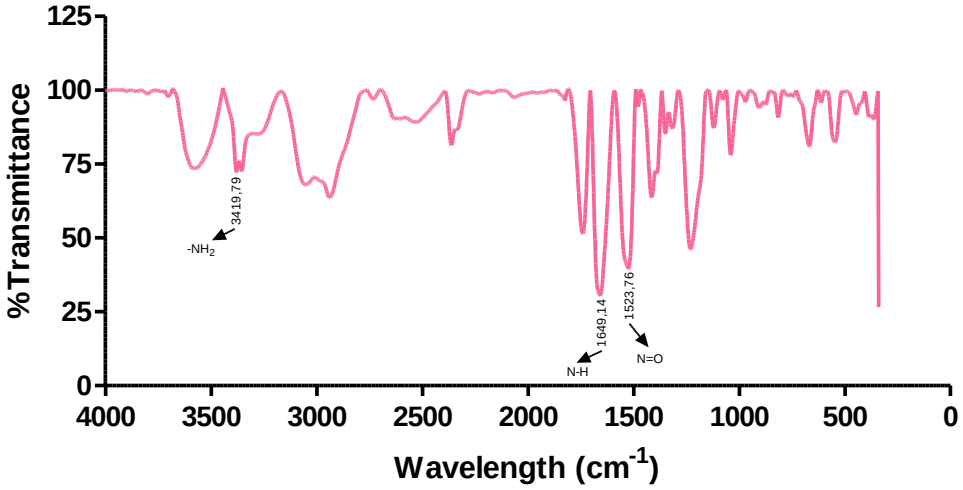
Tabel 7. Bobot *film* setiap interval waktu selama pengujian *swelling*

Formula	Bobot (g)						
	0 m	15 m	30 m	1 h	2 h	4 h	8 h
F1	1	1,07	1,18	1,38	1,56	1,72	1,90
	1	1,07	1,18	1,38	1,56	1,72	1,90
	1	1,07	1,18	1,38	1,56	1,72	1,90
F2	1	1,12	1,17	1,31	1,52	1,70	1,86
	1	1,12	1,17	1,31	1,52	1,70	1,86
	1	1,12	1,17	1,31	1,52	1,70	1,86
F3	1	1,09	1,19	1,33	1,57	1,67	1,81
	1	1,09	1,19	1,33	1,57	1,67	1,81
	1	1,09	1,19	1,33	1,57	1,67	1,81
F4	1	1,11	1,19	1,32	1,53	1,61	1,74
	1	1,11	1,19	1,32	1,53	1,61	1,74
	1	1,11	1,19	1,32	1,53	1,61	1,74

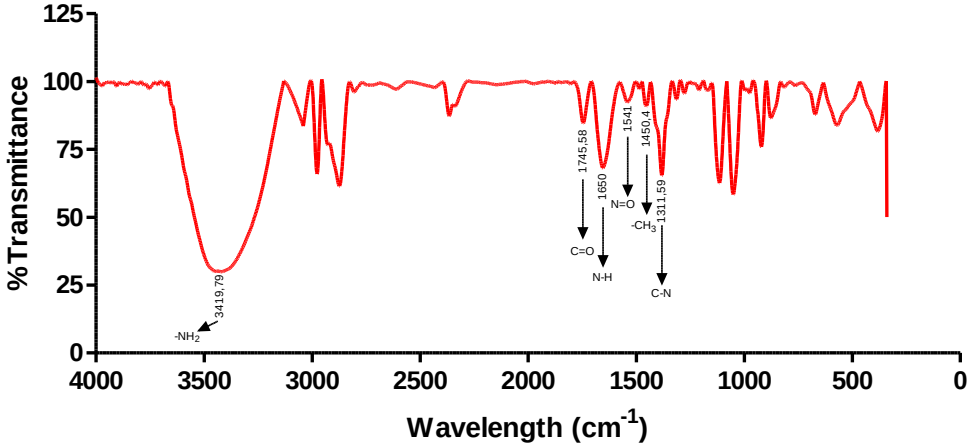
Tabel 8. Persentase rasio *swelling* sediaan *film* GSNO

Formula	Rasio Swelling (%)					
	15 m	30 m	1 h	2 h	4 h	8 h
F1	7,12	17,92	38,12	55,80	71,90	89,87
	7,15	17,90	38,13	55,78	72,02	89,91
	7,17	18,03	38,16	55,82	72,03	89,92
F2	11,98	17,03	31,19	52,45	69,62	85,67
	11,92	17,05	31,17	52,48	69,64	85,68
	11,95	17,04	31,20	52,50	69,65	85,69
F3	9,25	18,53	33,49	57,27	66,73	80,76
	9,28	18,56	33,56	57,28	66,78	80,78
	9,30	18,61	33,53	57,31	66,81	80,81
F4	11,23	19,18	32,13	53,54	60,82	73,54
	11,20	19,20	32,18	53,56	60,83	73,56
	11,25	19,22	32,20	53,58	60,85	73,57

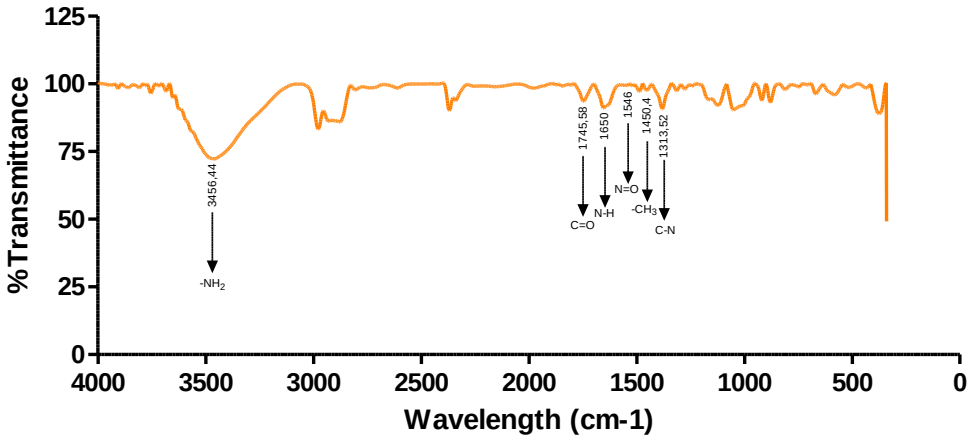
Lampiran 5. Hasil Pengamatan FTIR



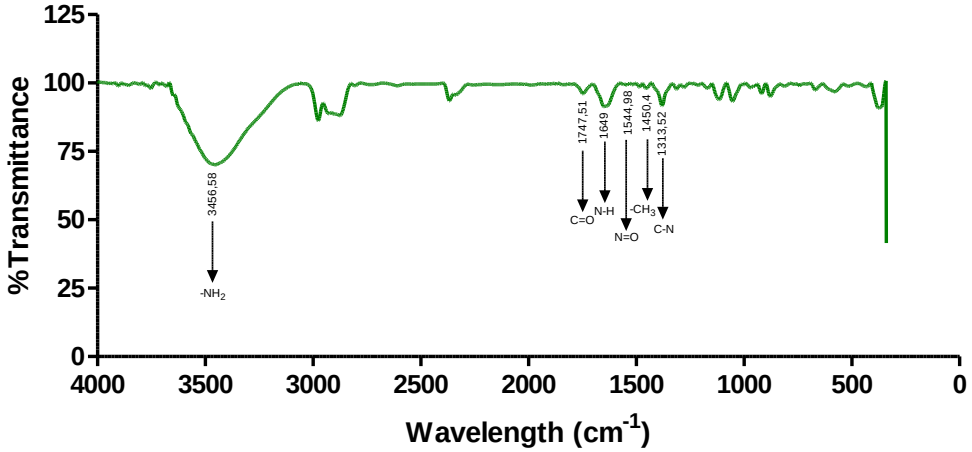
Gambar 17. Spektrum FTIR GSNO



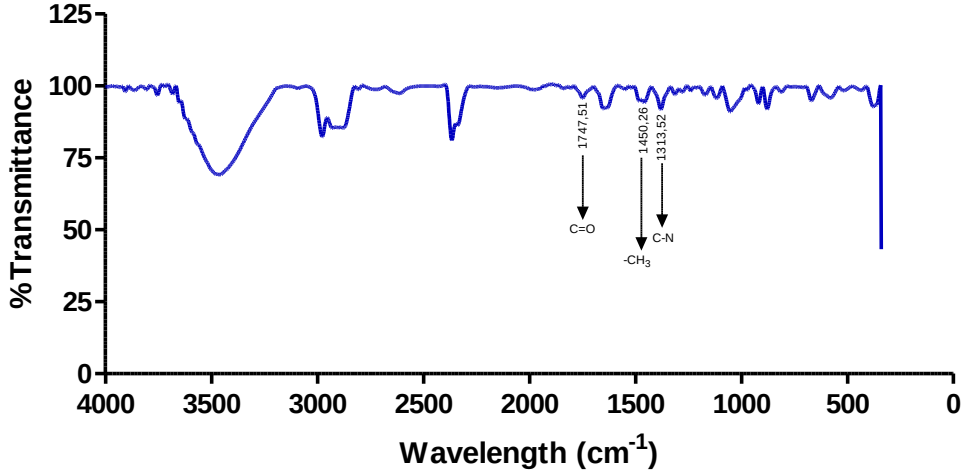
Gambar 18. Spektrum FTIR formula 1



Gambar 19. Spektrum FTIR formula 2



Gambar 20. Spektrum FTIR formula 3



Gambar 21. Spektrum FTIR formula 4

Lampiran 6. Hasil Uji Sifat Mekanik

Tabel 9. Hasil uji sifat mekanik sediaan *film* GSNO

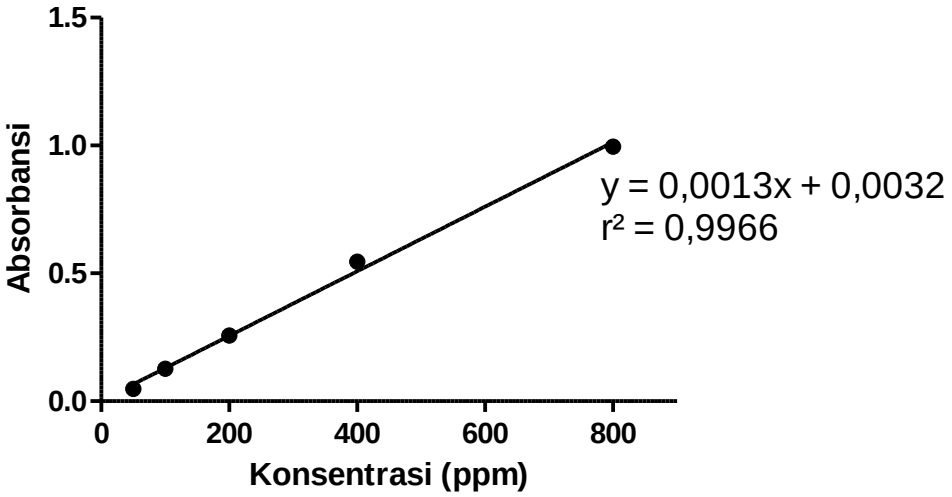
Formula	*Tensile Strenght*	Rata-rata ± SD (mPa)	*Elongation*	Rata-rata ± SD (%)	Modulus Young	Rata-rata ± SD (mPa)
	0,10		6,67		1,53	
F1	0,12	0,10 ± 0,01	8,67	7,78 ± 1,02	1,33	1,33 ± 0,21
	0,09		8,00		1,11	
	0,87		13,33		6,50	
F2	0,84	0,84 ± 0,03	15,33	14,44 ± 1,02	5,51	5,82 ± 0,59
	0,80		14,67		5,45	
	0,80		6,67		12,07	
F3	0,83	0,80 ± 0,02	8,00	8,22 ± 1,68	10,33	10,07 ± 2,13
	0,78		10,00		7,82	
	1,28		1,33		96,00	
F4	1,27	1,27 ± 0,01	3,33	3,11 ± 1,68	38,00	53,65 ± 37,09
	1,26		4,67		26,95	

Lampiran 7. Penetapan Kurva Baku dan Pengukuran Kadar GSNO dalam Sediaan *Film* GSNO

a) Penetapan Kurva Baku GSNO

Tabel 10. Kurva Baku GSNO

Konsentrasi	Absorbansi
800	0,996
400	0,545
200	0,257
100	0,127
50	0,048



Gambar 22. Grafik kurva baku GSNO

b) Pengukuran Kadar GSNO

Tabel 11. Kadar GSNO dalam sediaan *film* GSNO

Formula	Absorbansi	%Kadar	Rata-rata ± SD
	0,028	95,38	
F1	0,029	99,23	99,23 ± 3,85
	0,030	103,08	
	0,028	95,38	
F2	0,030	103,08	103,08 ± 7,69
	0,032	110,77	
	0,029	99,23	
F3	0,030	103,08	104,36 ± 5,88
	0,032	110,77	

c) Perhitungan

Contoh perhitungan %Kadar GSNO pada Formula 1, Replikasi 1

Diketahui :

10 mg sediaan *film* GSNO $\xrightarrow{\text{dilarutkan}}$ 10 mL metanol

dicuplik ↓

0,5 mL $\xrightarrow{\text{dicukupkan}}$ 1 mL (diukur absorbansinya)

Absorbansi F1 Replikasi 1 = 0,028

Faktor pengenceran (fp) = 2

Konsentrasi GSNO yang digunakan dalam formula 1 sebesar 1% (0,2 g/20 g berat *film* GSNO).

Berat *film* kering dari 20 gram menjadi 5 gram sehingga secara teoritis dalam 1 mg *film* kering mengandung GSNO sebesar 40 µg GSNO/mg sediaan *film* kering.

Persamaan kurva baku y = 0,0013x + 0,0032

Ditanyakan : % kandungan GSNO ?

Penyelesaian :

y = 0,0013x + 0,0032

0,028 = 0,0013x + 0,0032

$x = \frac{0,0248}{0,0013}$

x = 19,08 µg/mL

$$\text{Kadar GSNO dalam sediaan hasil analisis} = \frac{\text{x . fp . 10 ml}}{\text{berat } film \text{ yang ditimbang}}$$

$$= \frac{19,08\ \mu g/mL \cdot 2 \cdot 10\ mL}{10\ mg}$$

= 38,16 µg GSNO/mg sediaan

$$\%\text{Kandungan GSNO} = \frac{\text{Kadar GSNO dalam sediaan hasil analisis}}{\text{Kadar GSNO dalam sediaan secara teoritis}} \times 100\%$$

$$= \frac{38,16\ \mu g\ GSNO/mg\ sediaan}{40\ \mu g\ GSNO/mg\ sediaan} \times 100\% = 95\%$$

Lampiran 8. Data Hasil Analisis Statistika

Lampiran 8.1 Uji pH

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
pH	F1	.209	3	.	.991	3	.823
	F2	.196	3	.	.996	3	.878
	F3	.315	3	.	.891	3	.357
	F4	.304	3	.	.907	3	.407

a. Lilliefors Significance Correction

ANOVA

pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.070	3	.023	.676	.591
Within Groups	.278	8	.035		
Total	.349	11			

Lampiran 8.2 Uji Ketebalan

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Ketebalan	F1	.175	3	.	1.000	3	1.000
	F2	.253	3	.	.964	3	.637
	F3	.253	3	.	.964	3	.637
	F4	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

ANOVA

Ketebalan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.300	3	.100	363.747	.000
Within Groups	.002	8	.000		
Total	.302	11			

Multiple Comparisons

Dependent Variable: Ketebalan

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Formula	(J) Formula	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
F1	F2	-.18333*	.01354	.000	-.2267	-.1400
	F3	-.38667*	.01354	.000	-.4300	-.3433
	F4	-.37333*	.01354	.000	-.4167	-.3300
F2	F1	.18333*	.01354	.000	.1400	.2267
	F3	-.20333*	.01354	.000	-.2467	-.1600
	F4	-.19000*	.01354	.000	-.2334	-.1466
F3	F1	.38667*	.01354	.000	.3433	.4300
	F2	.20333*	.01354	.000	.1600	.2467
	F4	.01333	.01354	.762	-.0300	.0567
F4	F1	.37333*	.01354	.000	.3300	.4167
	F2	.19000*	.01354	.000	.1466	.2334
	F3	-.01333	.01354	.762	-.0567	.0300

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

Lampiran 8.3 Uji Swelling

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Rasio_Swelling	F1	.314	3	.	.893	3	.363
	F2	.175	3	.	1.000	3	1.000
	F3	.219	3	.	.987	3	.780
	F4	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

ANOVA

Rasio_Swelling

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	443.403	3	147.801	354722.293	.000
Within Groups	.003	8	.000		
Total	443.406	11			

Multiple Comparisons

Dependent Variable: Rasio_Swelling

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Formula	(J) Formula	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
F1	F2	4.22000*	.01667	.000	4.1666	4.2734
	F3	9.11667*	.01667	.000	9.0633	9.1700
	F4	16.34333*	.01667	.000	16.2900	16.3967
F2	F1	-4.22000*	.01667	.000	-4.2734	-4.1666
	F3	4.89667*	.01667	.000	4.8433	4.9500
	F4	12.12333*	.01667	.000	12.0700	12.1767
F3	F1	-9.11667*	.01667	.000	-9.1700	-9.0633
	F2	-4.89667*	.01667	.000	-4.9500	-4.8433
	F4	7.22667*	.01667	.000	7.1733	7.2800
F4	F1	-16.34333*	.01667	.000	-16.3967	-16.2900
	F2	-12.12333*	.01667	.000	-12.1767	-12.0700
	F3	-7.22667*	.01667	.000	-7.2800	-7.1733

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

Lampiran 8.4 Uji Sifat Mekanik

a) Tensile Strength

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Tensile_Strength	F1	.253	3	.	.964	3	.637
	F2	.204	3	.	.993	3	.843
	F3	.219	3	.	.987	3	.780
	F4	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

ANOVA

Tensile_Strength

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.097	3	.699	1270.707	.000
Within Groups	.004	8	.001		
Total	2.101	11			

Multiple Comparisons

Dependent Variable: Tensile_Strength

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Formula	(J) Formula	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
F1	F2	-.73333*	.01915	.000	-.7947	-.6720
	F3	-.70000*	.01915	.000	-.7613	-.6387
	F4	-1.16667*	.01915	.000	-1.2280	-1.1053
F2	F1	.73333*	.01915	.000	.6720	.7947
	F3	.03333	.01915	.365	-.0280	.0947
	F4	-.43333*	.01915	.000	-.4947	-.3720
F3	F1	.70000*	.01915	.000	.6387	.7613
	F2	-.03333	.01915	.365	-.0947	.0280
	F4	-.46667*	.01915	.000	-.5280	-.4053
F4	F1	1.16667*	.01915	.000	1.1053	1.2280
	F2	.43333*	.01915	.000	.3720	.4947
	F3	.46667*	.01915	.000	.4053	.5280

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

b) Elongation

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Elongation	F1	.252	3	.	.965	3	.640
	F2	.255	3	.	.963	3	.630
	F3	.220	3	.	.987	3	.779
	F4	.219	3	.	.987	3	.783

a. Lilliefors Significance Correction

ANOVA

Elongation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	194.763	3	64.921	33.683	.000
Within Groups	15.419	8	1.927		
Total	210.183	11			

Multiple Comparisons

Dependent Variable: Elongation

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Formula	(J) Formula	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
F1	F2	-6.66333*	1.13355	.002	-10.2934	-3.0333
	F3	-.44333	1.13355	.009	-4.0734	3.1867
	F4	4.67000*	1.13355	.014	1.0400	8.3000
F2	F1	6.66333*	1.13355	.002	3.0333	10.2934
	F3	6.22000*	1.13355	.003	2.5900	9.8500
	F4	11.33333*	1.13355	.000	7.7033	14.9634
F3	F1	.44333	1.13355	.009	-3.1867	4.0734
	F2	-6.22000*	1.13355	.003	-9.8500	-2.5900
	F4	5.11333*	1.13355	.009	1.4833	8.7434
F4	F1	-4.67000*	1.13355	.014	-8.3000	-1.0400
	F2	-11.33333*	1.13355	.000	-14.9634	-7.7033
	F3	-5.11333*	1.13355	.009	-8.7434	-1.4833

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

c) Modulus Young

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Modulus_Young	F1	.179	3	.	.999	3	.948
	F2	.367	3	.	.793	3	.097
	F3	.214	3	.	.989	3	.801
	F4	.330	3	.	.866	3	.286

a. Lilliefors Significance Correction

ANOVA

Modulus_Young

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5279.691	3	1759.897	5.099	.029
Within Groups	2761.249	8	345.156		
Total	8040.940	11			

Multiple Comparisons

Dependent Variable: Modulus_Young

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Formula	(J) Formula	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
F1	F2	-4.49667	15.16918	.990	-53.0737	44.0804
	F3	-8.75000	15.16918	.936	-57.3271	39.8271
	F4	-52.32667*	15.16918	.035	-100.9037	-3.7496
F2	F1	4.49667	15.16918	.990	-44.0804	53.0737
	F3	-4.25333	15.16918	.992	-52.8304	44.3237
	F4	-47.83000	15.16918	.054	-96.4071	.7471
F3	F1	8.75000	15.16918	.936	-39.8271	57.3271
	F2	4.25333	15.16918	.992	-44.3237	52.8304
	F4	-43.57667	15.16918	.080	-92.1537	5.0004
F4	F1	52.32667*	15.16918	.035	3.7496	100.9037
	F2	47.83000	15.16918	.054	-.7471	96.4071
	F3	43.57667	15.16918	.080	-5.0004	92.1537

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

Lampiran 8.5 Analisis Kandungan Obat

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_GSNO	F1	.175	3	.	1.000	3	1.000
	F2	.175	3	.	1.000	3	.999
	F3	.253	3	.	.964	3	.638

a. Lilliefors Significance Correction

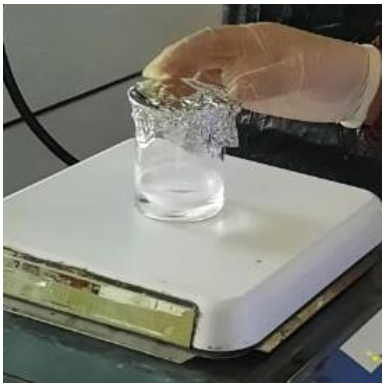
ANOVA

Kadar_GSNO

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.761	2	21.380	.591	.583
Within Groups	217.114	6	36.186		
Total	259.875	8			

Lampiran 9. Dokumentasi

(a) Hasil sintesis GSNO



(b) Eudragit RL-PO dilarutkan dalam Isopropil Alkohol

(c) GSNO dilarutkan dalam DMSO dengan kondisi terlindung dari cahaya lalu ditambahkan campuran 1

(d) Sediaan *film* GSNO dituang ke cawan petri dan dikeringkan menggunakan oven *vacuum drying*

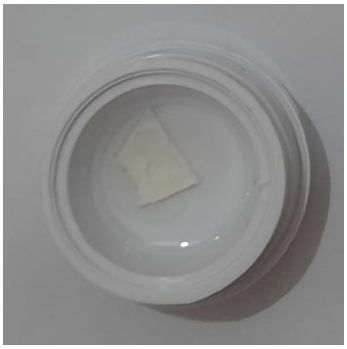
Gambar 23. Pembuatan sediaan *film* GSNO

Gambar 24. Pengukuran pH dengan pH *surface meter*

Gambar 25. Pengukuran ketebalan

F1

F2



F3

F4

Gambar 26. Uji *swelling* jam ke-8

Gambar 27. Alat oven *vacuum drying*

Gambar 28. Alat *universal testing machine*

Gambar 29. Alat *magnetic stirrer*

Gambar 30. Alat *vortex mixer*

Gambar 31. Alat sentrifus

Gambar 32. Alat spektrofotometer UV-Vis