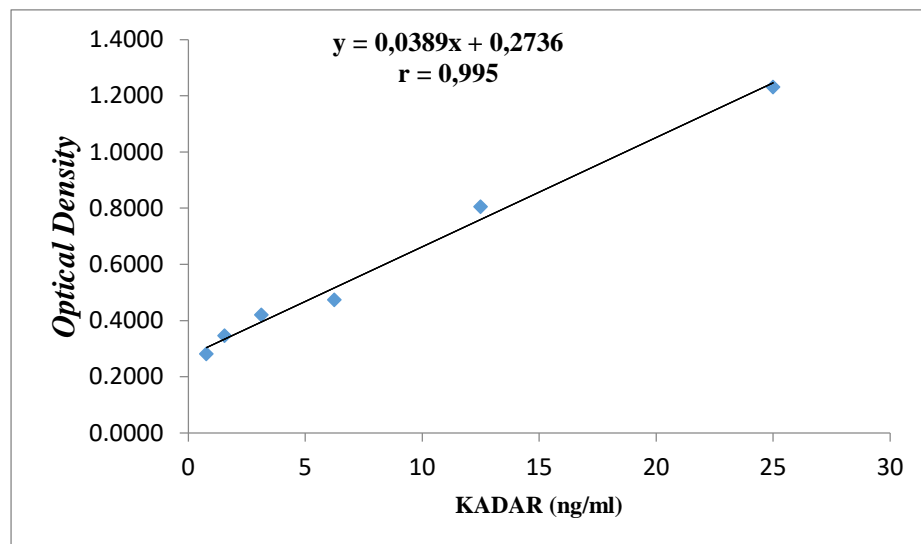


Lampiran 1. Tabel data serapan standar VCAM-1 dengan menggunakan beberapa seri kadar dan kurva baku

Standar VCAM-1

Kadar standar VCAM-1 (ng/mL)	Optical Density (OD)		
	OD 1	OD 2	RATA-RATA OD
0,781	0,2944	0,2672	0,2808
1,562	0,3580	0,3452	0,3452
3,125	0,4197	0,4199	0,4199
6,25	0,4959	0,4736	0,4736
12,5	0,8022	0,8048	0,8048
25	1,2766	1,1840	1,2303

Kurva standar VCAM-1



Lampiran 2. Tabel data serapan VCAM-1 sampel

Replikasi sampel	Normal			Kontrol negatif			Suspensi kurkumin			Nanoemulsi kurkumin		
	OD1	OD2	RATA - RATA OD	OD1	OD2	RATA - RATA OD	OD1	OD2	RATA - RATA OD	OD1	OD2	RATA - RATA OD
1	0,2912	0,2779	0,2846	0,6413	0,6529	0,6471	0,4590	0,4377	0,4484	0,3741	0,3822	0,378
2	0,3283	0,3196	0,3240	0,5034	0,5267	0,5151	0,4782	0,4621	0,4702	0,4572	0,4512	0,4542
3	0,2993	0,2832	0,2913	0,4745	0,4852	0,4799	0,5216	0,5140	0,5178	0,3520	0,3563	0,3542
4	0,3568	0,3570	0,3569	0,5119	0,5268	0,5194	0,5343	0,5473	0,5408	0,3681	0,3701	0,3691
5	0,3109	0,2951	0,3030	0,5622	0,5982	0,5802	0,3755	0,3680	0,3718	0,4213	0,4220	0,4217

Lampiran 3. Tabel data kadar VCAM-1 sampel (ng/mL)

Replikasi sampel	Normal	Kontrol negatif	Kontrol kurkumin	Nanoemulsi Kurkumin
1	0,281	9,601	4,492	2,687
2	1,294	6,206	5,052	4,642
3	0,453	5,302	6,277	2,070
4	2,141	6,317	6,868	2,455
5	0,755	7,881	5,042	3,805
Rata-rata±SE	0,985±0,336	6,627±0,758	5,546±0,441	3,132±0,475

Lampiran 4. Tabel data persentase penurunan kadar VCAM-1 sampel (%)

Replikasi sampel	Kontrol kurkumin	Nanoemulsi Kurkumin
1	32,212	59,443
2	23,755	29,943
3	5,271	68,753
4	3,650	62,954
5	23,917	42,569
Rata-rata ± SE	17,761±5,647	52,737±7,172

Lampiran 5. Tabel hasil uji *One Way ANOVA* dan uji *Turkey* kadar sampel VCAM-

1

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
KADAR_VCAM	.116	20	.200 [*]	.964	20	.625

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

a. Lilliefors Significance Correction

ANOVA

KADAR_VCAM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	107.387	3	35.796	25.825	.000
Within Groups	22.177	16	1.386		
Total	129.564	19			

Multiple Comparisons

Dependent Variable: KADAR_VCAM

Tukey HSD

(I) KELOMPOK	(J) KELOMPOK	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
NORMAL	KONTROL NEGATIF	-6.0766200 [*]	.7446027	.000	-8.206943	-3.946297
	SUSPENSİ KURKUMIN	-4.5615400 [*]	.7446027	.000	-6.691863	-2.431217
	NANOEMULSI KURKUMIN	-2.1470600 [*]	.7446027	.048	-4.277383	-.016737
KONTROL NEGATIF	NORMAL	6.0766200 [*]	.7446027	.000	3.946297	8.206943
	SUSPENSİ KURKUMIN	1.5150800	.7446027	.217	-.615243	3.645403
	NANOEMULSI KURKUMIN	3.9295600 [*]	.7446027	.000	1.799237	6.059883
SUSPENSİ	NORMAL	4.5615400 [*]	.7446027	.000	2.431217	6.691863

KURKUMIN	KONTROL	-1.5150800	.7446027	.217	-3.645403	.615243
	NEGATIF					
NANOEMULSI	NANOEMULSI	2.4144800*	.7446027	.024	.284157	4.544803
	KURKUMIN					
NANOEMULSI	NORMAL	2.1470600*	.7446027	.048	.016737	4.277383
KURKUMIN	KONTROL	-3.9295600*	.7446027	.000	-6.059883	-1.799237
	NEGATIF					
	SUSPENSI	-2.4144800*	.7446027	.024	-4.544803	-.284157
	KURKUMIN					

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

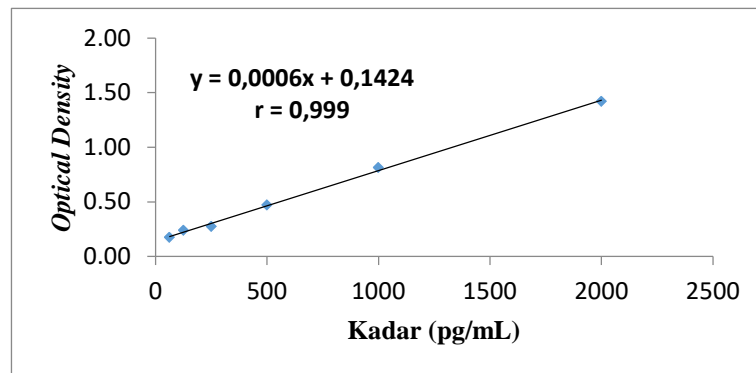
Lampiran 6. Gambar Plate ELISA VCAM-1

	1	2	3	4	5	6	7	8	9	10	11	12
A	STANDAR 1	STANDAR 1	SAMPEL N2	SAMPEL N2	SAMPEL +5	SAMPEL +5	SAMPEL NS1	SAMPEL NS1	SAMPEL NE3	SAMPEL NE3	SAMPEL SLN5	SAMPELS LN5
B	STANDAR 2	STANDAR 2	SAMPEL N3	SAMPEL N3	SAMPEL +6	SAMPEL +6	SAMPEL NS2	SAMPEL NS2	SAMPEL NE4	SAMPEL NE4	SAMPEL SLN6	SAMPEL SLN6
C	STANDAR 3	STANDAR 3	SAMPEL N4	SAMPEL N4	SAMPEL -1	SAMPEL -1	SAMPEL NS3	SAMPEL NS3	SAMPEL NE5	SAMPEL NE5	SAMPEL S1	SAMPEL S1
D	STANDAR 4	STANDAR 4	SAMPEL N5	SAMPEL N5	SAMPEL -2	SAMPEL -2	SAMPEL NS4	SAMPEL NS5	SAMPEL NE6	SAMPEL NE6	SAMPEL S2	SAMPEL S2
E	STANDAR 5	STANDAR 5	SAMPEL +1	SAMPEL +1	SAMPEL -3	SAMPEL -3	SAMPEL NS5	SAMPEL NS5	SAMPEL SLN1	SAMPEL SLN1	SAMPEL S3	SAMPEL S3
F	STANDAR 6	STANDAR 6	SAMPEL +2	SAMPEL +2	SAMPEL -4	SAMPEL -4	SAMPEL NS6	SAMPEL NS6	SAMPEL SLN2	SAMPEL SLN2	SAMPEL S4	SAMPEL S4
G	BLANKO	BLANKO	SAMPEL +3	SAMPEL +3	SAMPEL -5	SAMPEL -5	SAMPEL NE1	SAMPEL NE1	SAMPEL SLN3	SAMPEL SLN3	SAMPEL S5	SAMPEL S5
H	SAMPEL N1	SAMPEL N1	SAMPEL +4	SAMPEL +4	SAMPEL -6	SAMPEL -6	SAMPEL NE2	SAMPEL NE2	SAMPEL SLN4	SAMPEL SLN4	SAMPEL S6	SAMPEL S6

Lampiran 7. Tabel data serapan standar IL-6 dengan menggunakan beberapa seri kadar dan kurva baku Standar IL-6

Kadar standar IL-6 (pg/mL)	Optical Density (OD)		
	OD 1	OD 2	RATA-RATA OD
62,5	0,1724	0,1770	0,1747
125	0,2397	0,2411	0,2404
250	0,2825	0,2667	0,2746
500	0,4779	0,4627	0,4703
1000	0,8162	0,8089	0,8126
2000	1,4876	1,3533	1,4205

Kurva Standar IL-6



Lampiran 8. Tabel data serapan sampel IL-6

Replikasi sampel	Normal			Kontrol negatif			Suspensi kurkumin			Nanoemulsi kurkumin		
	OD1	OD2	RATA-RATA OD	OD1	OD2	RATA-RATA OD	OD1	OD2	RATA-RATA OD	OD1	OD2	RATA-RATA OD
1	0,1738	0,1755	0,1747	0,2059	0,2013	0,2036	0,2125	0,2169	0,2147	0,1764	0,1751	0,1758
2	0,1779	0,1726	0,1753	0,1979	0,1984	0,1982	0,1887	0,1891	0,1889	0,1872	0,1863	0,1868
3	0,1685	0,1691	0,1688	0,1966	0,1952	0,1959	0,1783	0,1790	0,1787	0,1791	0,1789	0,1790
4	0,1636	0,1683	0,1660	0,1895	0,1889	0,1892	0,1832	0,1841	0,1837	0,1647	0,1658	0,1653
5	0,1751	0,1742	0,1747	0,2092	0,2116	0,2104	0,1922	0,1934	0,1928	0,1866	0,1881	0,1874

Lampiran 9. Tabel data kadar IL-6 sampel (pg/mL)

Replikasi sampel	Normal	Kontrol negatif	Kontrol kurkumin	Nanoemulsi Kurkumin
1	67,583	115,833	134,333	69,416
2	68,583	106,75	91,333	87,75
3	57,833	103	74,25	74,833
4	53,083	91,833	82,583	51,916
5	67,583	127,167	97,833	88,75
Rata-rata±SE	62,933±3,148	108,916±5,968	96,067±10,362	74,533±6,762

Lampiran 10. Tabel data persentase penurunan kadar IL-6 sampel (%)

Replikasi sampel	Kontrol kurkumin	Nanoemulsi Kurkumin
1	23,336	36,265
2	16,143	19,433
3	31,828	31,292
4	24,177	52,333
5	10,175	18,515
Rata-rata ± SE	21,132 ± 3,697	31,568±6,208

Lampiran 11. Tabel hasil uji *One Way* ANOVA dan uji *Turkey* kadar sampel IL-6

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
KADAR_IL6	.132	20	.200 [*]	.946	20	.315

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

ANOVA

KADAR_IL6

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9255.719	3	3085.240	14.209	.000
Within Groups	3474.106	16	217.132		
Total	12729.824	19			

Multiple Comparisons

Dependent Variable: KADAR_IL6

Tukey HSD

(I) KELOMPOK	(J) KELOMPOK	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
NORMAL	KONTROL NEGATIF	-52.0667000 [*]	9.3194764	.000	-78.729907	-25.403493

	SUSPENS KURKUMIN	-43.0333400*	9.3194764	.001	-69.696547	-16.370133
	NANOEMULSI KURKUMIN	-11.6000400	9.3194764	.609	-38.263247	15.063167
KONTROL NEGATIF	NORMAL	52.0667000*	9.3194764	.000	25.403493	78.729907
	SUSPENS KURKUMIN	9.0333600	9.3194764	.768	-17.629847	35.696567
	NANOEMULSI KURKUMIN	40.4666600*	9.3194764	.003	13.803453	67.129867
SUSPENS KURKUMIN	NORMAL	43.0333400*	9.3194764	.001	16.370133	69.696547
	KONTROL NEGATIF	-9.0333600	9.3194764	.768	-35.696567	17.629847
	NANOEMULSI KURKUMIN	31.4333000*	9.3194764	.018	4.770093	58.096507
NANOEMULSI KURKUMIN	NORMAL	11.6000400	9.3194764	.609	-15.063167	38.263247
	KONTROL NEGATIF	-40.4666600*	9.3194764	.003	-67.129867	-13.803453
	SUSPENS KURKUMIN	-31.4333000*	9.3194764	.018	-58.096507	-4.770093

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

Lampiran 12. Gambar Plate ELISA IL-6

	1	2	3	4	5	6	7	8	9	10	11	12
A	STANDAR 1	STANDAR 1	SAMPEL N2	SAMPEL N2	SAMPEL +5	SAMPEL +5	SAMPEL NS1	SAMPEL NS1	SAMPEL NE3	SAMPEL NE3	SAMPEL SLN5	SAMPELS LN5
B	STANDAR 2	STANDAR 2	SAMPEL N3	SAMPEL N3	SAMPEL +6	SAMPEL +6	SAMPEL NS2	SAMPEL NS2	SAMPEL NE4	SAMPEL NE4	SAMPEL SLN6	SAMPEL SLN6
C	STANDAR 3	STANDAR 3	SAMPEL N4	SAMPEL N4	SAMPEL -1	SAMPEL -1	SAMPEL NS3	SAMPEL NS3	SAMPEL NE5	SAMPEL NE5	SAMPEL S1	SAMPEL S1
D	STANDAR 4	STANDAR 4	SAMPEL N5	SAMPEL N5	SAMPEL -2	SAMPEL -2	SAMPEL NS4	SAMPEL NS5	SAMPEL NE6	SAMPEL NE6	SAMPEL S2	SAMPEL S2
E	STANDAR 5	STANDAR 5	SAMPEL +1	SAMPEL +1	SAMPEL -3	SAMPEL -3	SAMPEL NS5	SAMPEL NS5	SAMPEL SLN1	SAMPEL SLN1	SAMPEL S3	SAMPEL S3
F	STANDAR 6	STANDAR 6	SAMPEL +2	SAMPEL +2	SAMPEL -4	SAMPEL -4	SAMPEL NS6	SAMPEL NS6	SAMPEL SLN2	SAMPEL SLN2	SAMPEL S4	SAMPEL S4
G	BLANKO	BLANKO	SAMPEL +3	SAMPEL +3	SAMPEL -5	SAMPEL -5	SAMPEL NE1	SAMPEL NE1	SAMPEL SLN3	SAMPEL SLN3	SAMPEL S5	SAMPEL S5
H	SAMPEL N1	SAMPEL N1	SAMPEL +4	SAMPEL +4	SAMPEL -6	SAMPEL -6	SAMPEL NE2	SAMPEL NE2	SAMPEL SLN4	SAMPEL SLN4	SAMPEL S6	SAMPEL S6

Lampiran 13. Surat keterangan *Ethical Clearance*



الجامعة الإسلامية الإندونيسية
UNIVERSITAS ISLAM INDONESIA
FAKULTAS KEDOKTERAN
KOMITE ETIK PENELITIAN KEDOKTERAN DAN KESEHATAN

Sekretariat : Jl. Kaliurang Km. 14,5 YOGYAKARTA 55584
 Telp. (0274) 898444 ext. 2060 Fax. (0274) 898444 ext. 2007; E-mail : ke.fkuii@yahoo.co.id

Nomor : 78/Ka.Kom.Et/70/KE/IV/2018

KETERANGAN LOLOS KAJI ETIK

ETHICAL APPROVAL

Komite Etik Penelitian Kedokteran dan Kesehatan Fakultas Kedokteran Universitas Islam Indonesia dalam upaya melindungi hak asasi dan kesejahteraan subyek penelitian kedokteran dan kesehatan, telah mengkaji dengan teliti protokol berjudul :

The Ethics Committee of the Faculty of Medicine, Islamic University of Indonesia, with regards of the protection of human rights and welfare in medical and health research, has carefully reviewed the research protocol entitled :

"Studi Aktivitas Sediaan Nanoemulsi Kurkumin Sebagai Terapi Preventif pada Tikus yang Diberi Diet Tinggi Lemak Berdasarkan Parameter VCAM-1 dan IL-6."

Peneliti Utama : Farah Deastasa Nabilah
Principal Investigator

Nama Institusi : Program Studi Farmasi FMIPA UII
Name of the Institution

dan telah menyetujui protokol tersebut diatas.
and approved the above-mentioned protocol.



Yogyakarta, 30 April 2018

Ketua
 Chairman

Prof. Dr. Dra. Wiryatun Lestariana, Apt

***Ethical Approval berlaku satu tahun dari tanggal persetujuan**

****Peneliti berkewajiban**

1. Menjaga kerahasiaan identitas subyek penelitian
2. Memberitahukan status penelitian apabila :
 - a. Setelah masa berlakunya keterangan lolos kaji etik, penelitian masih belum selesai, dalam hal ini *ethical clearance* harus diperpanjang
 - b. Penelitian berhenti di tangan jalan
3. Melaporkan kejadian serius yang tidak diinginkan (*serious adverse events*)
4. Peneliti tidak boleh melakukan tindakan apapun pada subyek sebelum penelitian lolos kaji etik dan *informed consent*

Lampiran 14. Hasil uji PSA

HORIBA
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.00

2018.05.18 09:21:47

SZ-100

Nanoemulsi Curcumin R1.nsz Measurement Results

Date : Wednesday, February 07, 2018
 Measurement Type : Particle Size
 Sample Name : Nanoemulsi Curcumin
 Scattering Angle : 90
 Temperature of the Holder : 24.8 deg. C
 Dispersion Medium Viscosity : 0.899 mPa.s
 Transmission Intensity before Meas. : 25053
 Distribution Form : |Standard|
 Distribution Form(Dispersity) : Monodisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 1684 kCPS

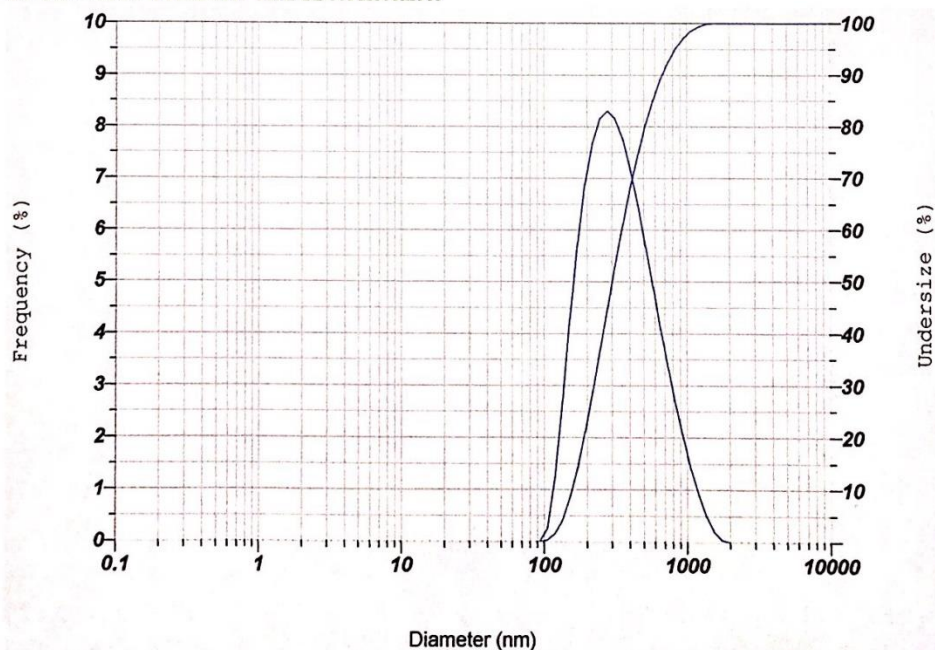
Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	367.9 nm	225.3 nm	262.5 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	367.9 nm	225.3 nm	262.5 nm

Cumulant Operations

Z-Average : 287.1 nm
 PI : 0.130

Molecular Weight Measurement



2018.05.18 09:20:47



HORIBA SZ-100 for Windows [Z Type] Ver2.00

SZ-100

Nanoemulsi Curcumin Farah R2.nsz Measurement Results

Date : Wednesday, February 14, 2018
 Measurement Type : Particle Size
 Sample Name : Nano emulsi Curcumin Farah
 Scattering Angle : 90
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.898 mPa.s
 Transmission Intensity before Meas. : 14049
 Distribution Form : [Standard]
 Distribution Form(Dispersity) : Monodisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 1831 kCPS

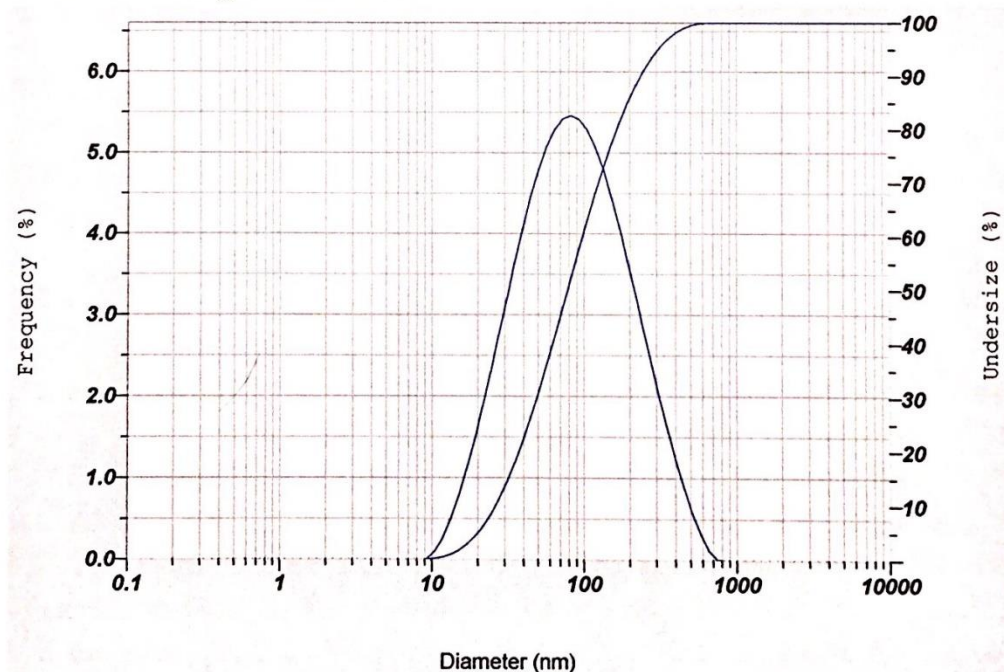
Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	108.8 nm	94.3 nm	77.5 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	108.8 nm	94.3 nm	77.5 nm

Cumulant Operations

Z-Average : 74.9 nm
 PI : 0.343

Molecular Weight Measurement



2018.05.18 09:19:04

HORIBA
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.00

SZ-100

Measurement Results

Zeta Nanoemulsi Curcumin Farah Fix R1.nzt

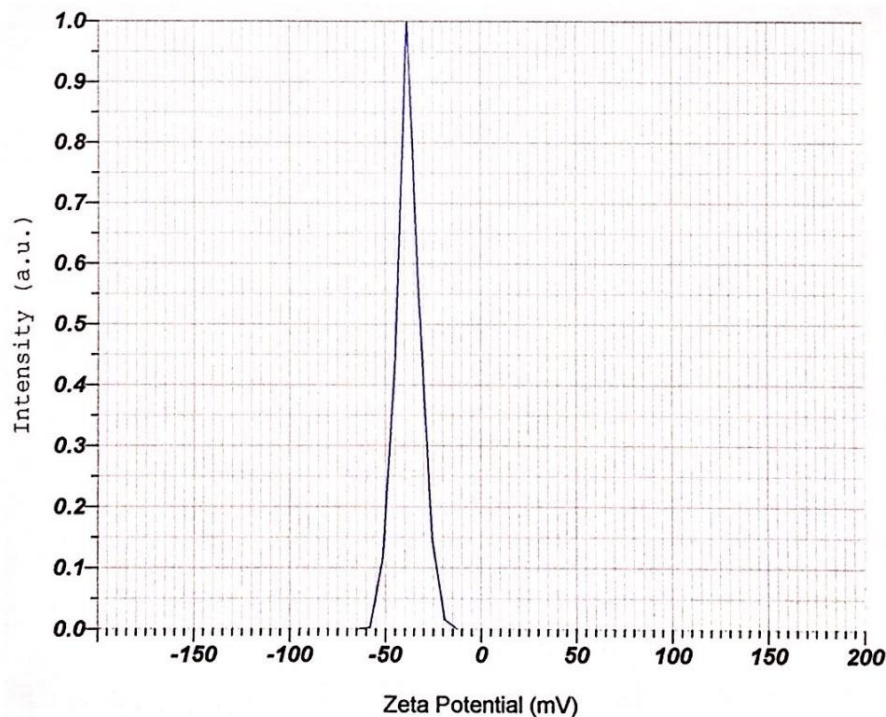
Measurement Results

Date : Thursday, April 26, 2018 3:00:33 PM
 Measurement Type : Zeta Potential
 Sample Name : Nanoemulsi Curcumin
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.897 mPa.s
 Conductivity : 0.093 mS/cm
 Electrode Voltage : 3.9 V


Calculation Results

Peak No.	Zeta Potential	Electrophoretic Mobility
1	-38.0 mV	-0.000294 cm ² /Vs
2	-- mV	-- cm ² /Vs
3	-- mV	-- cm ² /Vs

Zeta Potential (Mean) : -38.0 mV
 Electrophoretic Mobility Mean : -0.000294 cm²/Vs



Lampiran 15. Certificate of Analysis Kurkumin



Certificate of Analysis

8.20354.0010 Curcumin for synthesis
Batch S7313554

Batch Values		
Assay (HPLC, area%)	77.9	% (a/a)
Bisdemethoxycurcumin (HPLC; Area%)	4.9	% (a/a)
Demethoxycurcumin (HPLC; Area%)	16.6	% (a/a)
Identity (IR)	passes test	

Date of examination (DD.MM.YYYY) 12.10.2016
Minimum shelf life (DD.MM.YYYY) 31.10.2021

Dr. Oliver Schramel
Responsible laboratory manager quality control

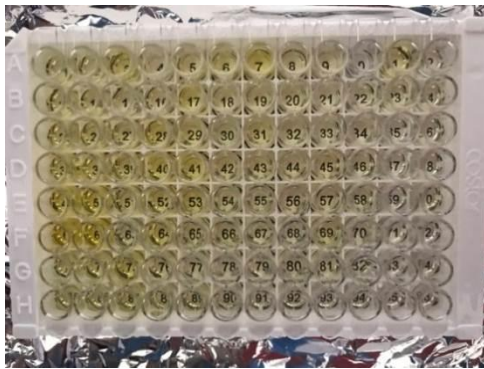
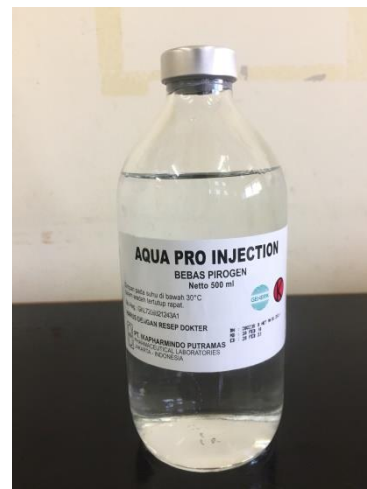
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SALSA Version 498417 /990000374439/ Date: 13.10.2016

Page 1 of 1

Lampiran 16. Dokumentasi alat, bahan dan perlakuan hewan uji

Gambar 1. Sediaan yang digunakan untuk uji pada tikus

Gambar 2. *ELISA plate*Gambar 3. *ELISA plate reader*Gambar 4. *Magnetic stirrer*Gambar 5. *Aqua pro injection*



Gambar 6. Kurkumin



Gambar 7. Minyak mygliol



Gambar 8. Propilen glycol



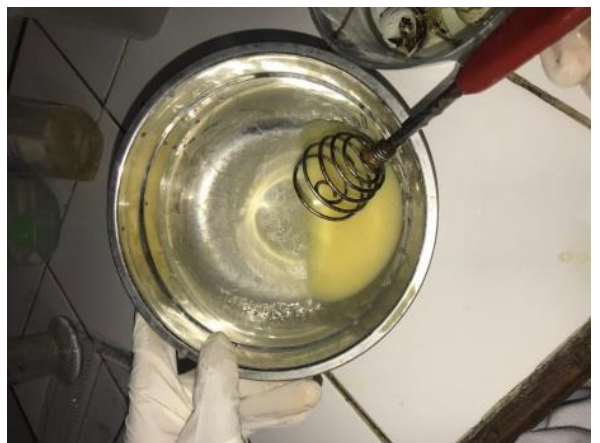
Gambar 9. Tween 80



Gambar 10. Minyak babi dalam kemasan



Gambar 11. Telur puyuh



Gambar 12. Pembuatan induksi minyak babi dan kuning telur puyuh (1:1)



Gambar 13. Hewan uji tikus *Wistar* jantan