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APPENDICES

APPENDIX A

Table 32. Calibration data of AA in methanol solution at 210 nm

Concentration ($\mu\text{g/ml}$)	Area
96.62	958777
196.74	1834562
302.50	2759636
405.68	3662217
501.78	4502868
594.83	5316795
827.35	7350772
1033.22	9151562

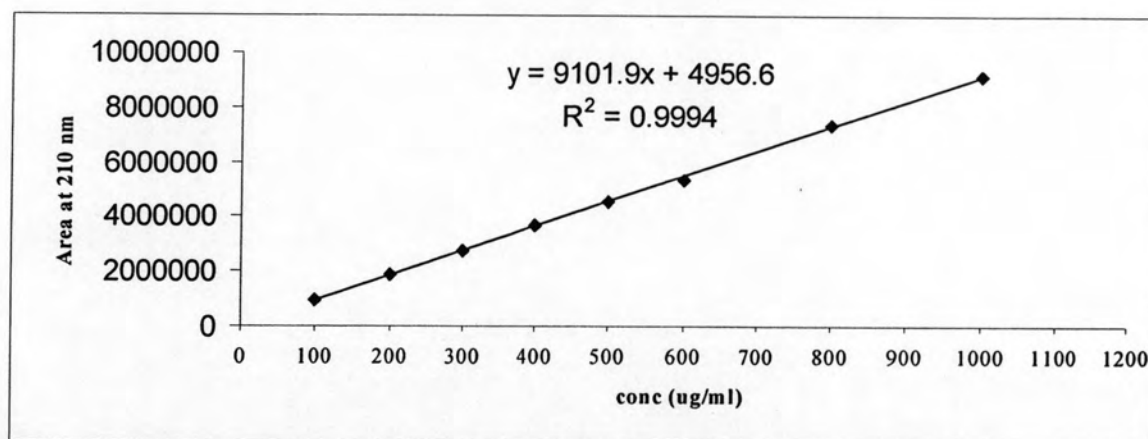


Figure 11 Calibration curve of AA in methanol at 210 nm

Table 33. Data of precision of AA.

Number	Area at 210 nm		
	1 st day	2 nd day	3 rd day
1	3746522	3697769	3803959
2	3745845	3653768	3775990
3	3691651	3642311	3674142
4	3723595	3693307	3698190
5	3724461	3667695	3729804
6	3762239	3636325	3700166
Average	3732386	3665196	3730375
SD	24786	25866	50212
%CV	0.66	0.71	1.35

Table 34. The percentage of recovery of AA with T-80:PL-40

Concentration ($\mu\text{g/ml}$)	% Recovery of AA			Mean	SD
	1	2	3		
200	104.96	104.38	104.38	104.57	0.33
300	96.06	97.42	96.42	96.63	0.70
400	97.63	97.14	97.74	97.50	0.32
500	96.10	96.57	96.80	96.49	0.336
600	98.02	98.51	98.55	98.36	0.30

Table 35. The percentage of recovery of AA with T-80:PL-90

Concentration ($\mu\text{g/ml}$)	% Recovery of AA			Mean	SD
	1	2	3		
200	107.04	105.11	105.54	105.90	1.01
300	99.39	101.03	102.07	100.83	1.35
400	101.08	102.56	102.58	102.07	0.86
500	101.96	101.38	102.28	101.87	0.45
600	100.53	101.88	102.00	101.47	0.82

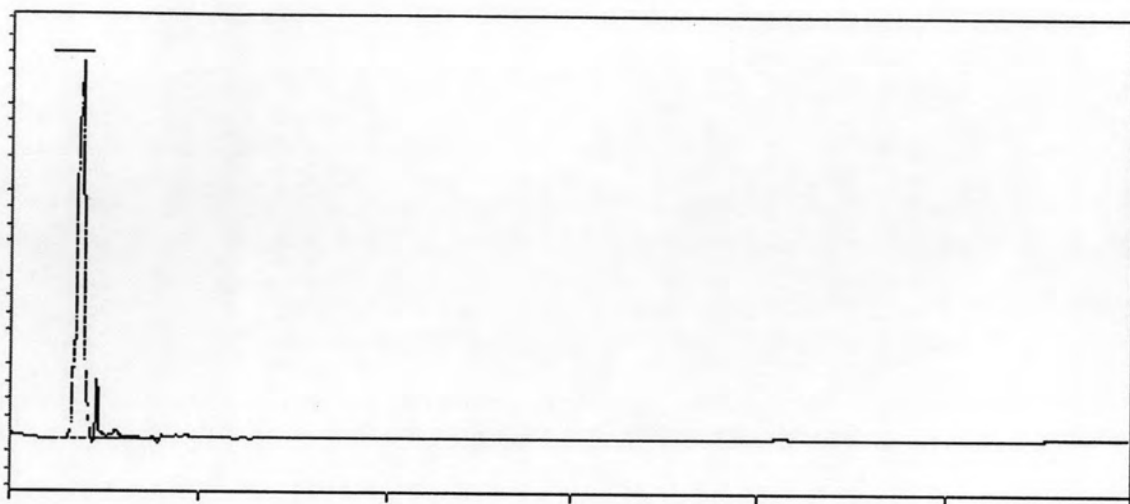


Figure 12 HPLC chromatogram of placebo solution (sample T-80:PL-40 solution) in methanol

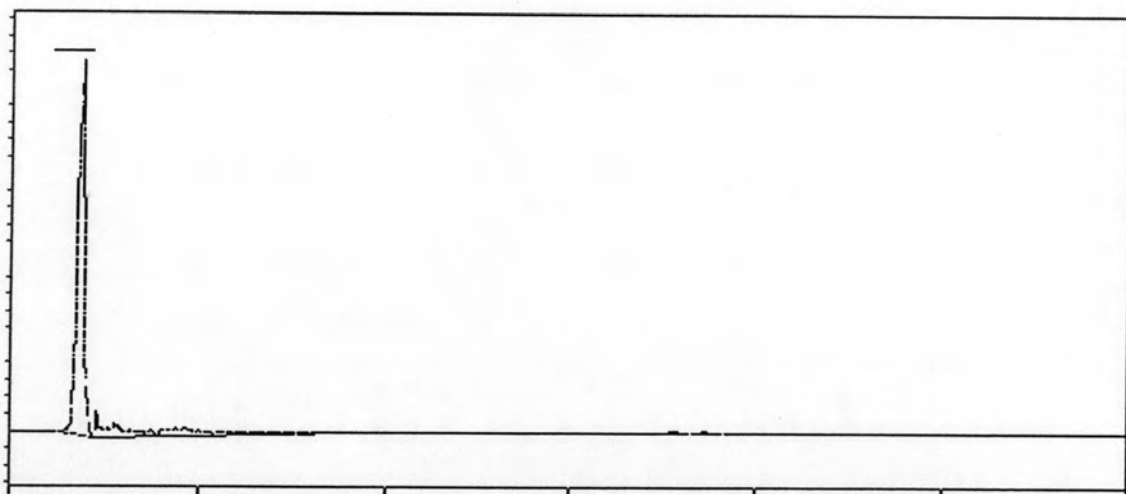


Figure 13 HPLC chromatogram of placebo solution (sample T-80:PL-90 solution) in methanol

Table 36. The stability data of AA loaded GC-SLN with T-80:PL-40, T-80:PL-90 of both before and after exposure to the ambient and accelerated conditions

Storage condition	Storage period	AA loaded GC-SLN (T-80:PL-40)		AA loaded GC-SLN (T-80:PL-90)	
		AA (mg/ml) \pm SD	% AA \pm SD	AA (mg/ml) \pm SD	% AA \pm SD
(Ambient) Room temperature	Initial	4.87 \pm 0.06	100.16 \pm 1.43	5.09 \pm 0.25	100.00 \pm 4.93
	3 months	3.91 \pm 0.43	80.31 \pm 8.92	4.82 \pm 0.01	94.91 \pm 4.50
At 4 °C	Initial	5.07 \pm 0.03	100.07 \pm 0.63	4.89 \pm 0.31	100.07 \pm 6.35
	3 months	4.22 \pm 0.25	83.25 \pm 4.92	4.20 \pm 0.45	86.17 \pm 9.44
At 45 °C	Initial	4.78 \pm 0.19	99.93 \pm 4.04	4.71 \pm 0.01	100.07 \pm 0.24
	3months	-	-	-	-
Accelerated condition	Initial	4.87 \pm 0.08	100.07 \pm 1.66	4.74 \pm 0.32	99.93 \pm 6.68
	After 6 cycles	4.58 \pm 0.12	94.04 \pm 2.49	4.63 \pm 0.48	97.82 \pm 9.06

APPENDIX B

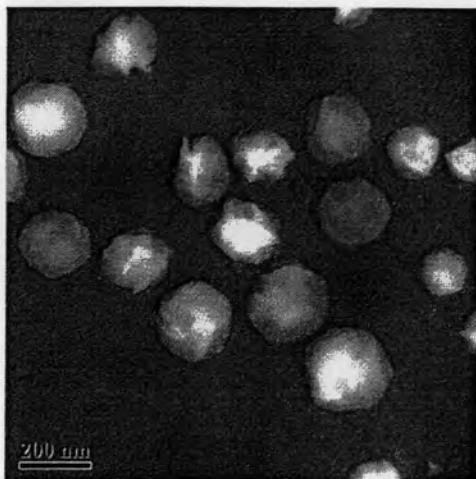


Figure 14 The TEM micrograph of GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-90)

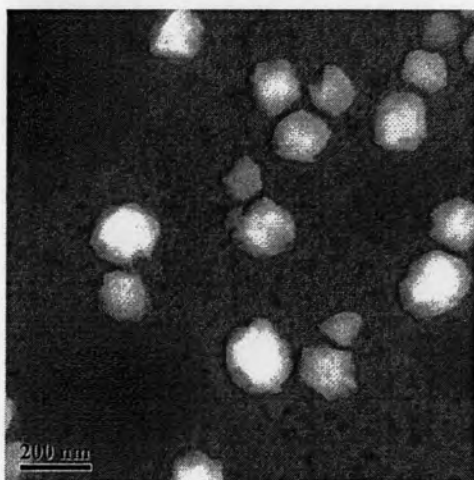


Figure 15 The TEM micrograph of GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-90)

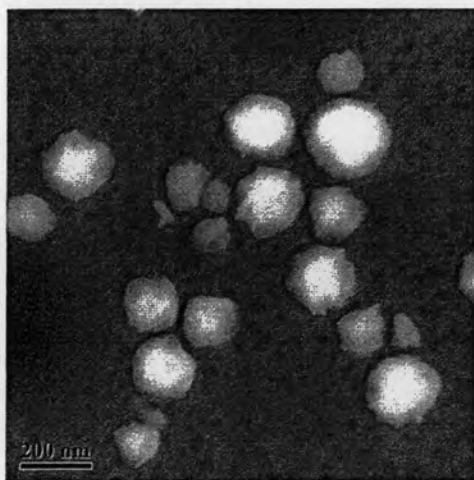


Figure 16 The TEM micrograph of GC-SLN after storage for 3 months prepared by solvent diffusion method (T-80;PL-90)

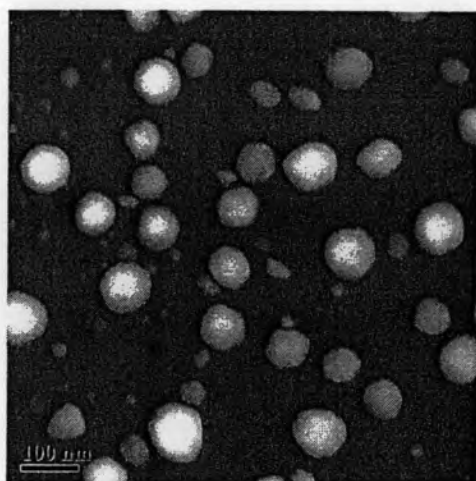


Figure 17 The TEM micrograph of GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-40)

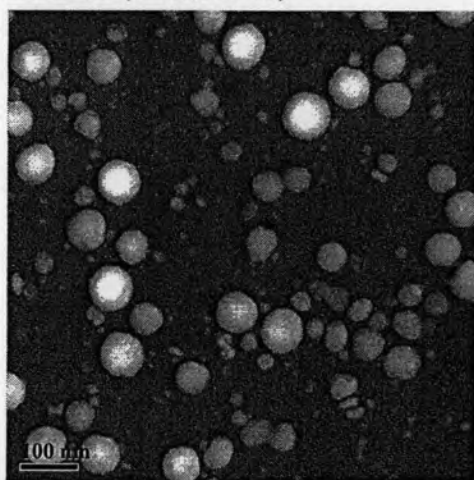


Figure 18 The TEM micrograph of GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-40)

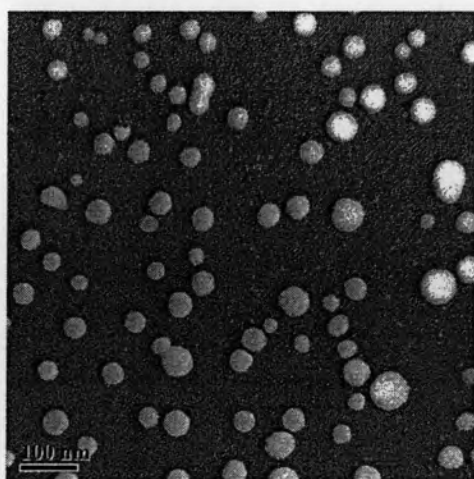


Figure 19 The TEM micrograph of GC-SLN after storage for 3 months prepared by solvent diffusion method (T-80;PL-40)

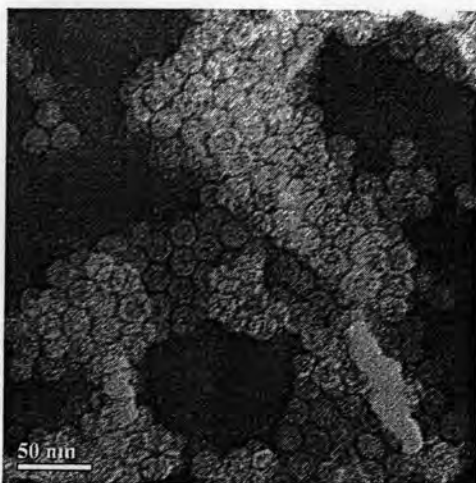


Figure 20 The TEM micrograph of AA loaded GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-40)

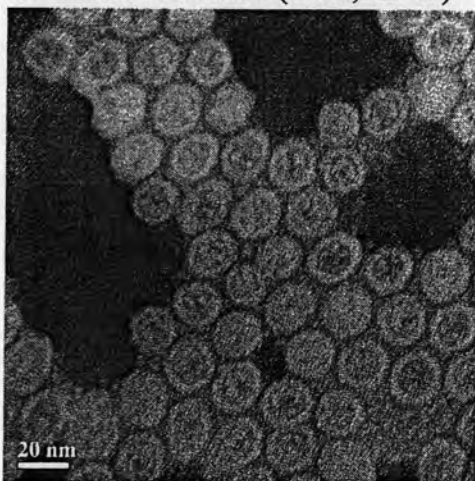


Figure 21 The TEM micrograph of AA loaded GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-40)

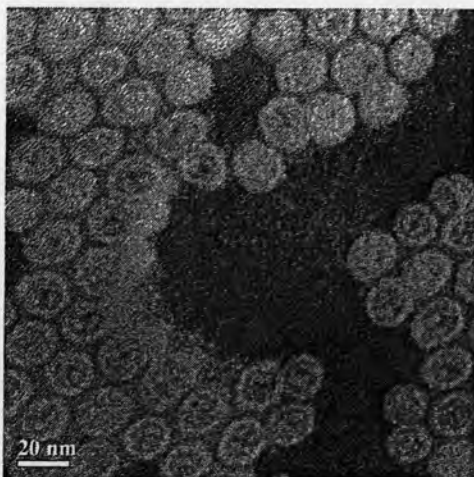


Figure 22 The TEM micrograph of AA loaded GC-SLN after storage for 3 months at room temperature prepared by solvent diffusion method (T-80;PL-40)

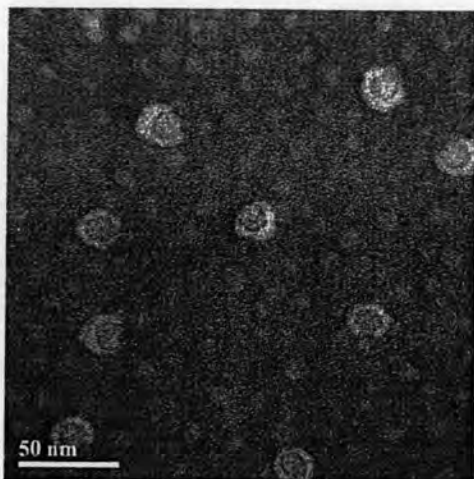


Figure 23 The TEM micrograph of AA loaded GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-40)

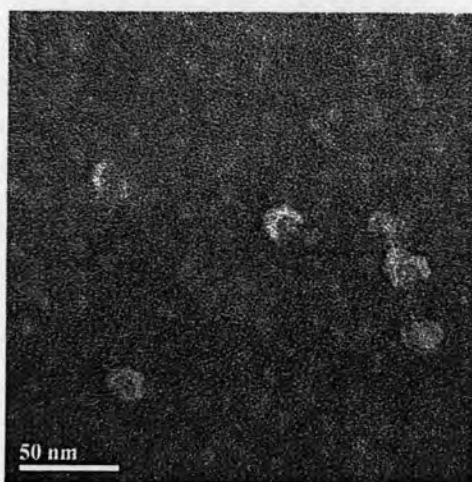


Figure 24 The TEM micrograph of AA loaded GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-40)

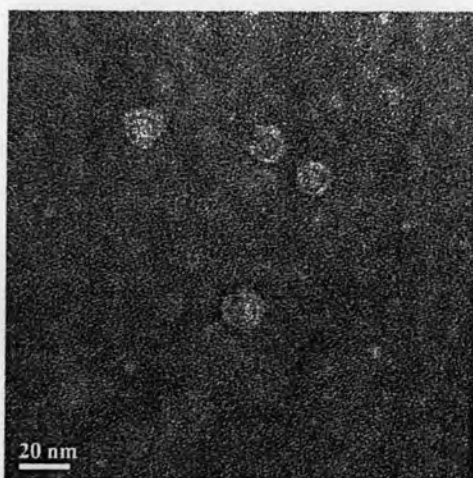


Figure 25 The TEM micrograph of AA loaded GC-SLN after storage for 3 months at 4 °C prepared by solvent diffusion method (T-80;PL-40)

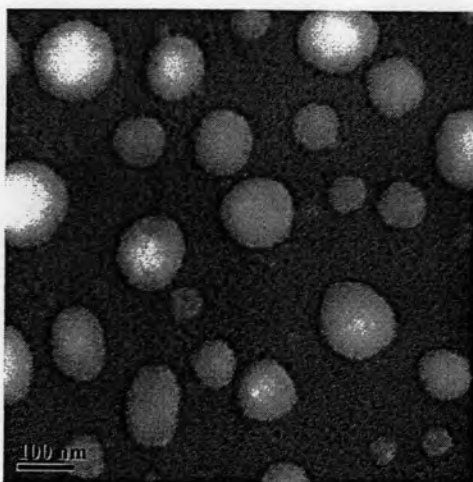


Figure 26 The TEM micrograph of AA loaded GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-90)

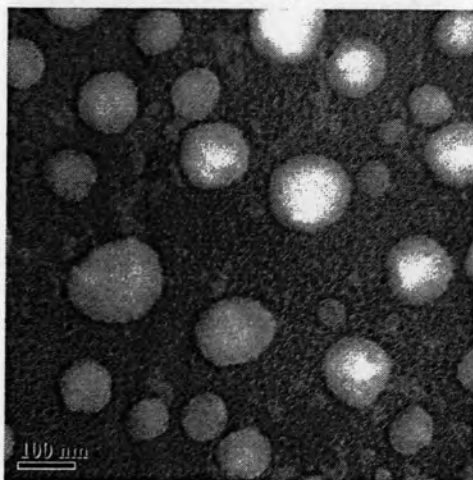


Figure 27 The TEM micrograph of AA loaded GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-90)

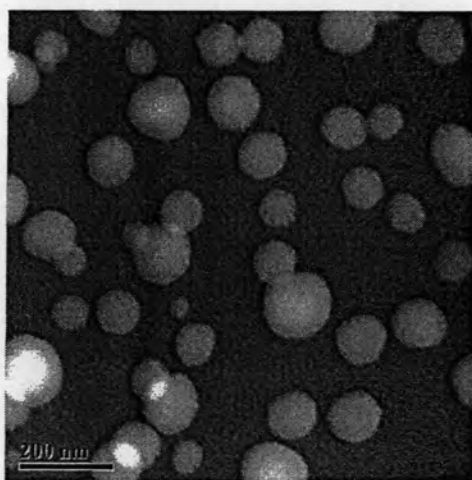


Figure 28 The TEM micrograph of AA loaded GC-SLN after storage for 3 months at room temperature prepared by solvent diffusion method (T-80;PL-90)

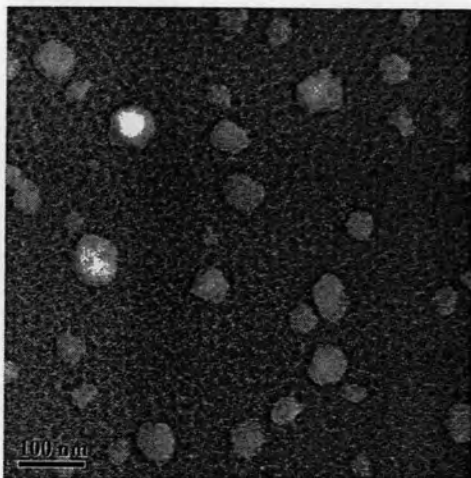


Figure 29 The TEM micrograph of AA loaded GC-SLN before autoclaving prepared by solvent diffusion method (T-80;PL-90)

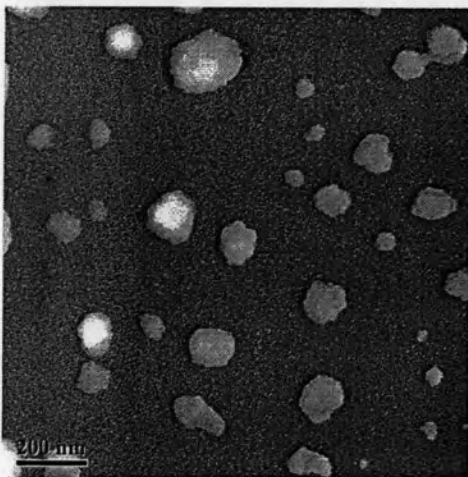


Figure 30 The TEM micrograph of AA loaded GC-SLN after autoclaving prepared by solvent diffusion method (T-80;PL-90)

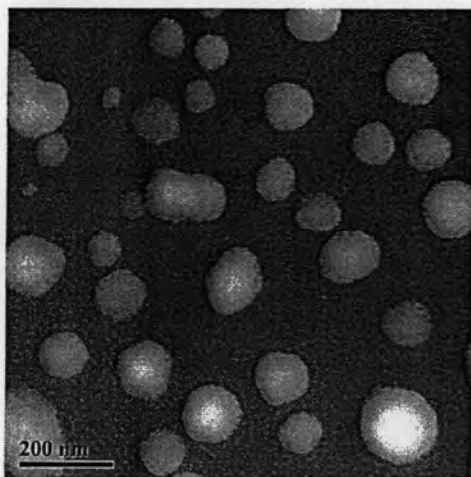


Figure 31 The TEM micrograph of AA loaded GC-SLN after storage for 3 months at 4 °C prepared by solvent diffusion method (T-80;PL-90)

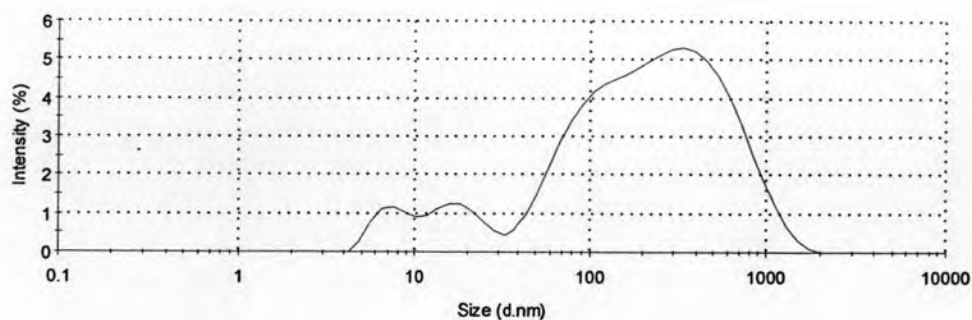


Figure 32 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL40 (8:2) by solvent diffusion method before autoclaving for kept at room temperature

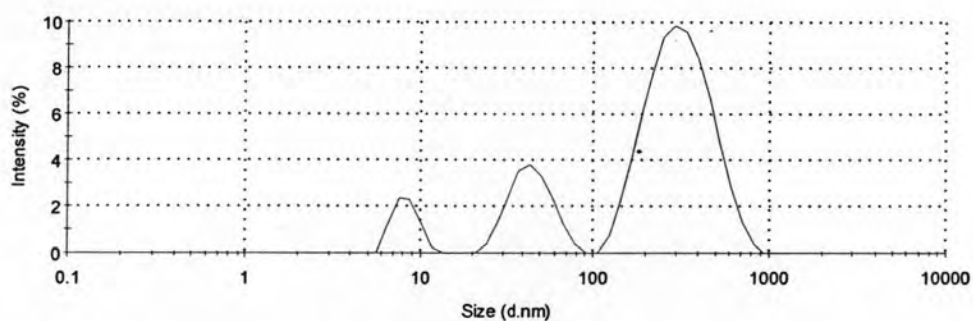


Figure 33 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL40 (8:2) by solvent diffusion method after autoclaving for kept at room temperature

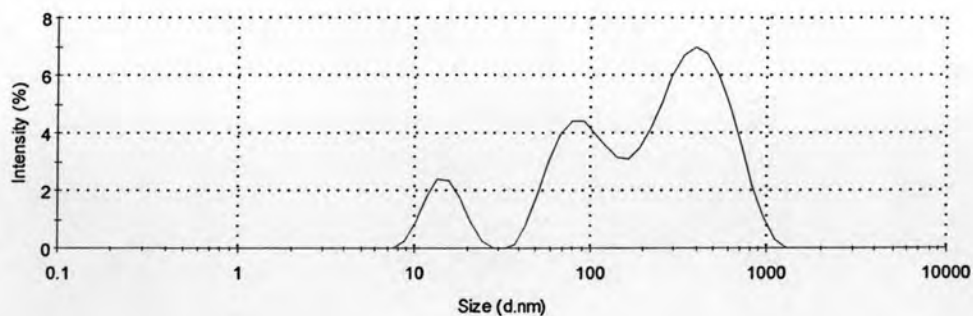


Figure 34 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL40 (8:2) by solvent diffusion method after storage for 3 months at room temperature

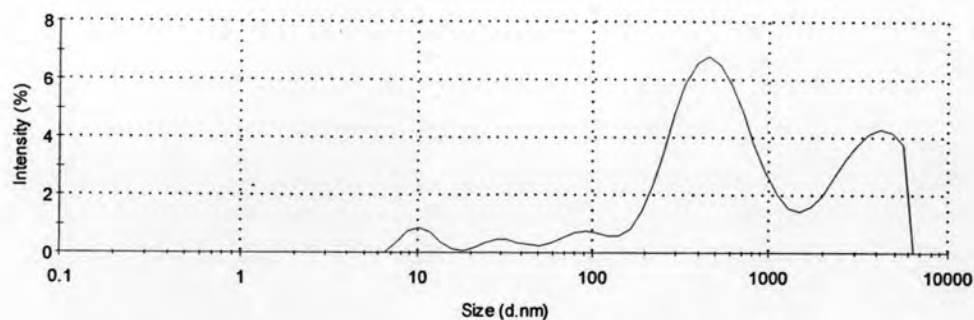


Figure 35 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL90 (8:2) by solvent diffusion method before autoclaving fore kept at room temperature

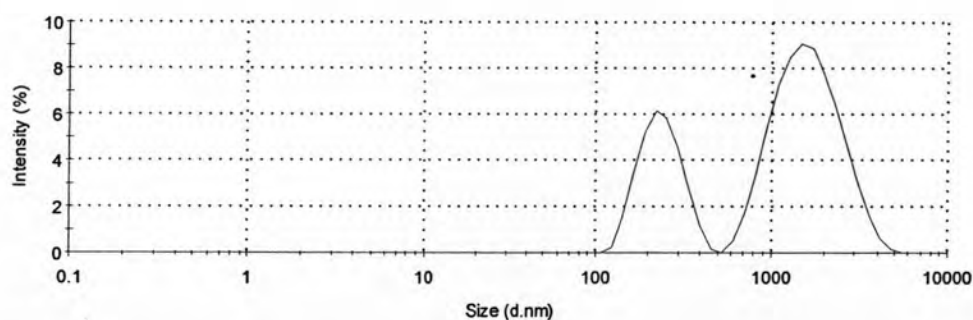


Figure 36 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL90 (8:2) by solvent diffusion method after autoclaving for kept at room temperature

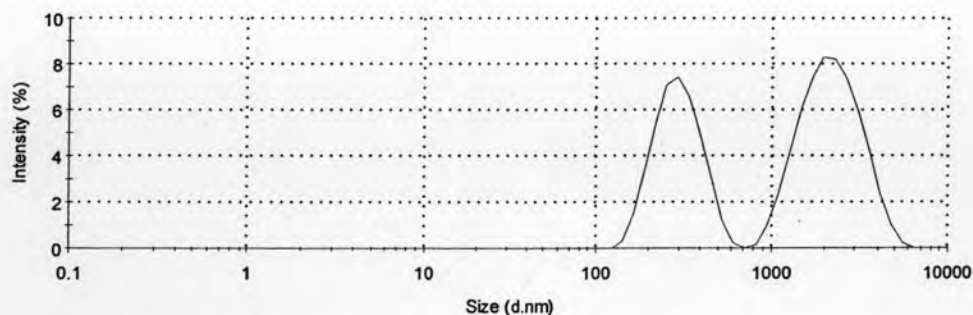


Figure 37 Particle size distribution of drug free SLN dispersions containing GC as solid lipid with T-80:PL90 (8:2) by solvent diffusion method after storage for 3 months at room temperature

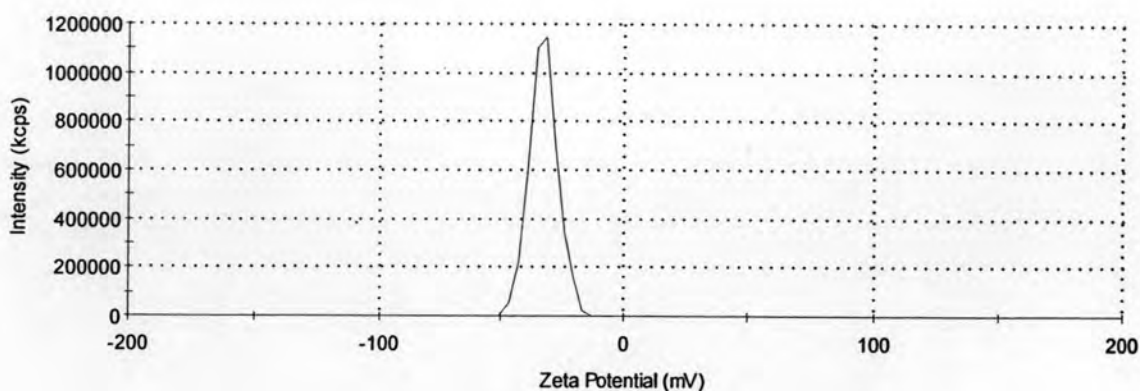


Figure 38 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-40 (8:2) by solvent diffusion before autoclaving fore kept at room temperature

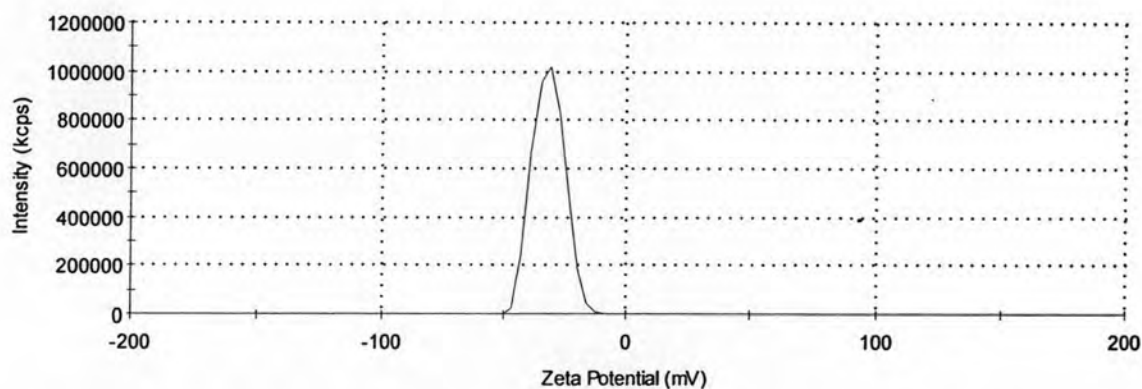


Figure 39 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-40 (8:2) by solvent diffusion after autoclaving fore kept at room temperature

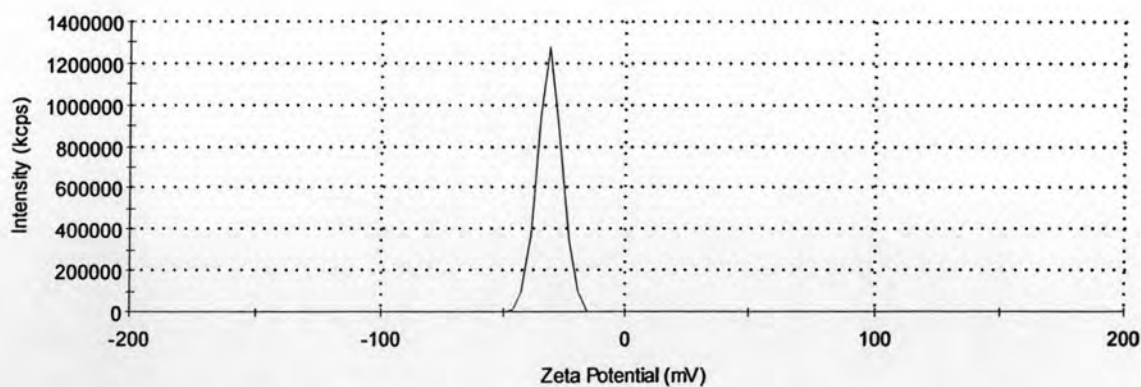


Figure 40 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-40 (8:2) by solvent diffusion after storage for 3 months at room temperature

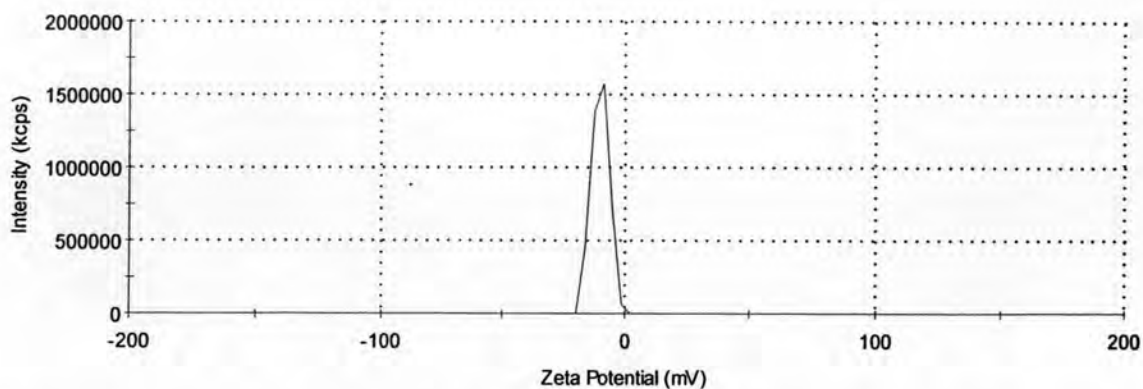


Figure 41 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-90 (8:2) by solvent diffusion before autoclaving fore kept at room temperature

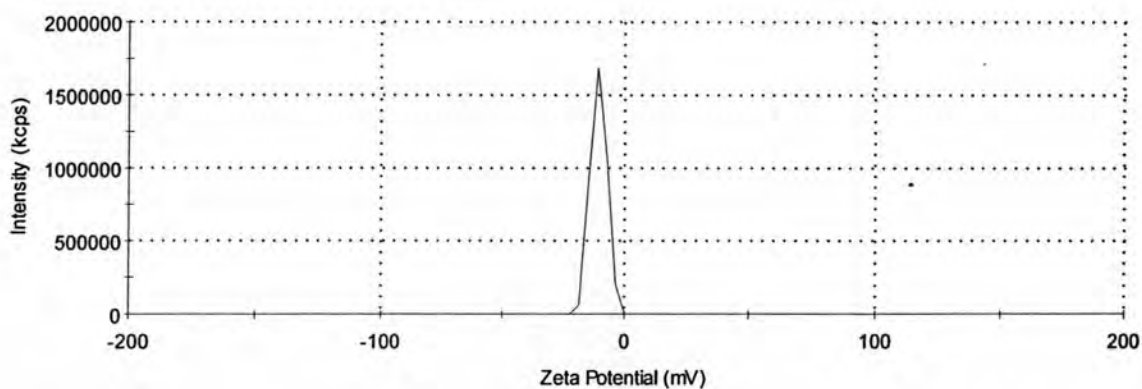


Figure 42 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-90 (8:2) by solvent diffusion after autoclaving fore kept at room temperature

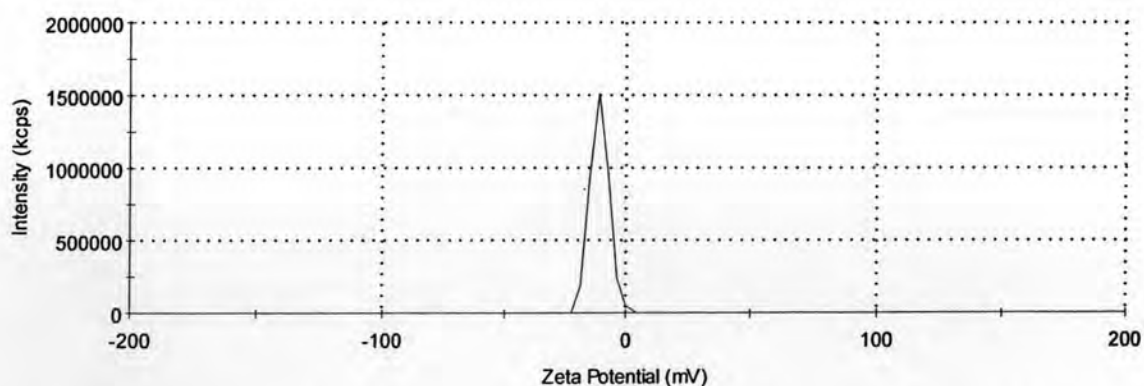


Figure 43 The zeta graph of drug free SLN dispersions containing GC as solid lipid with T-80:PL-90 (8:2) by solvent diffusion after storage for 3 months at room temperature

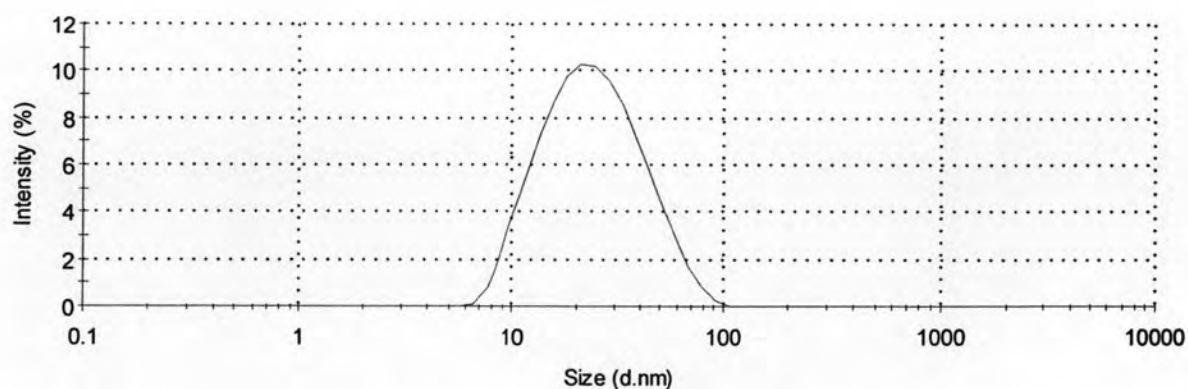


Figure 44 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving for kept at 4 °C

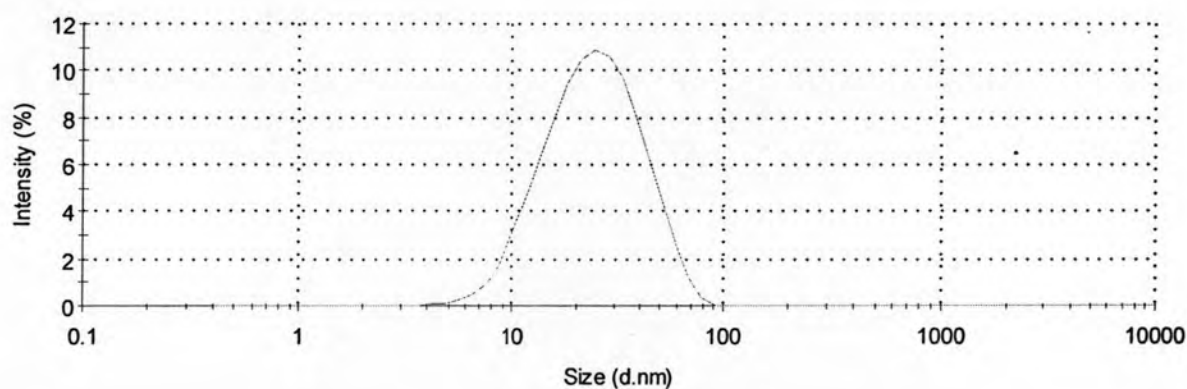


Figure 45 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving for kept at 4 °C

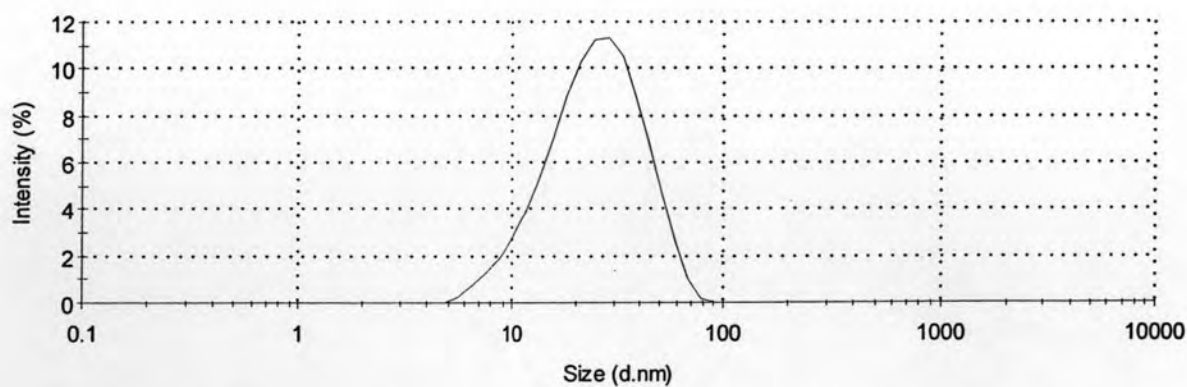


Figure 46 The particle size o distribution f AA loaded GC-SLN with T-80:PL-40 (8:2) after storage for 3 months at 4 °C

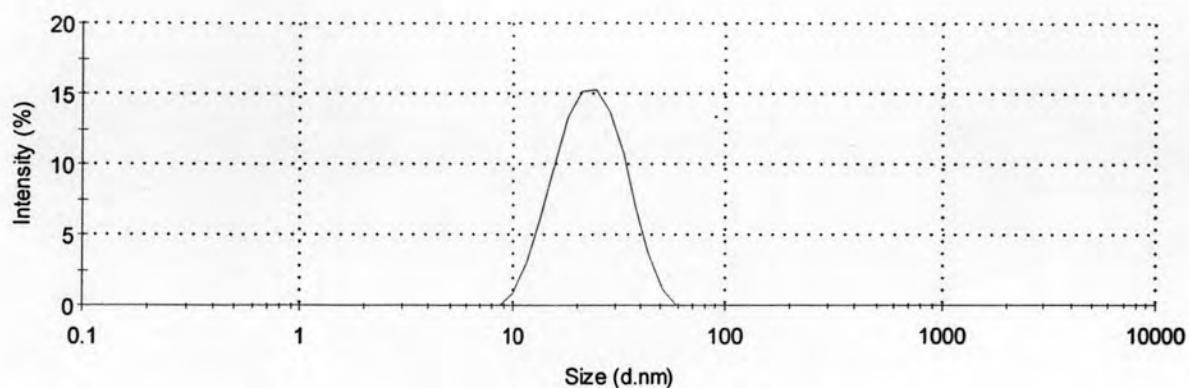


Figure 47 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving for kept at room temperature

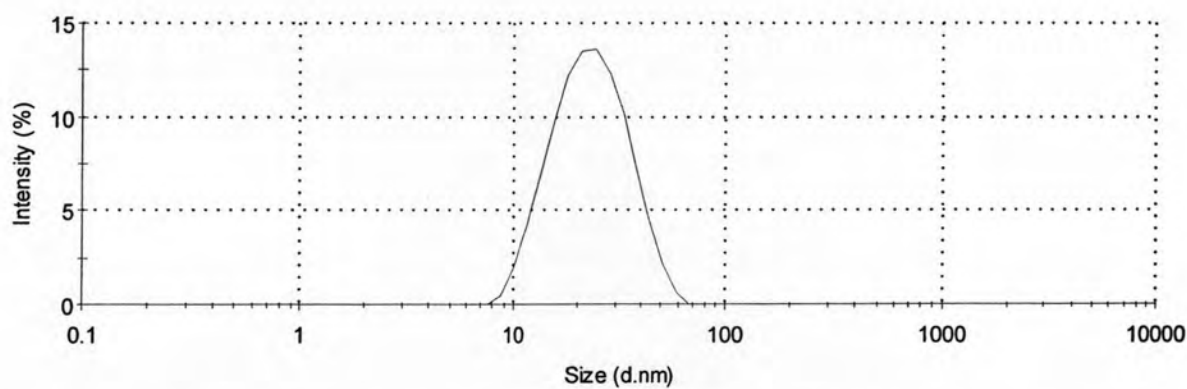


Figure 48 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving for kept at room temperature

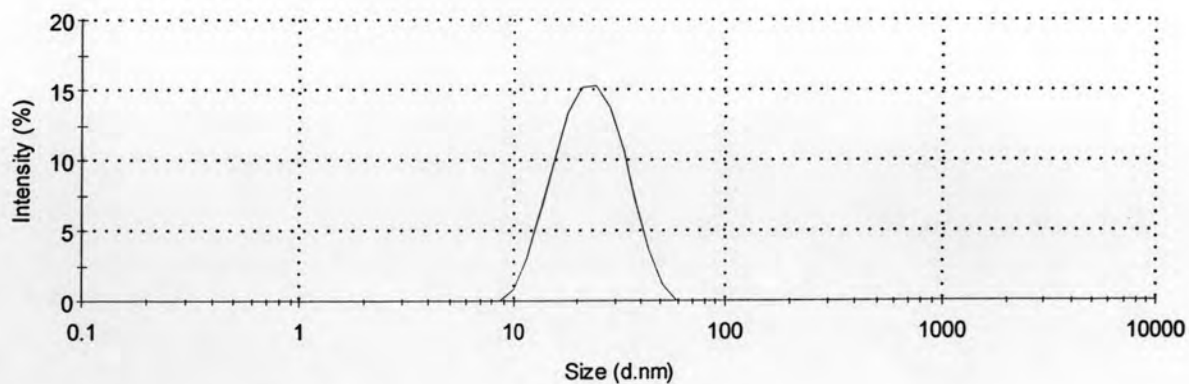


Figure 49 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) after storage for 3 months at room temperature

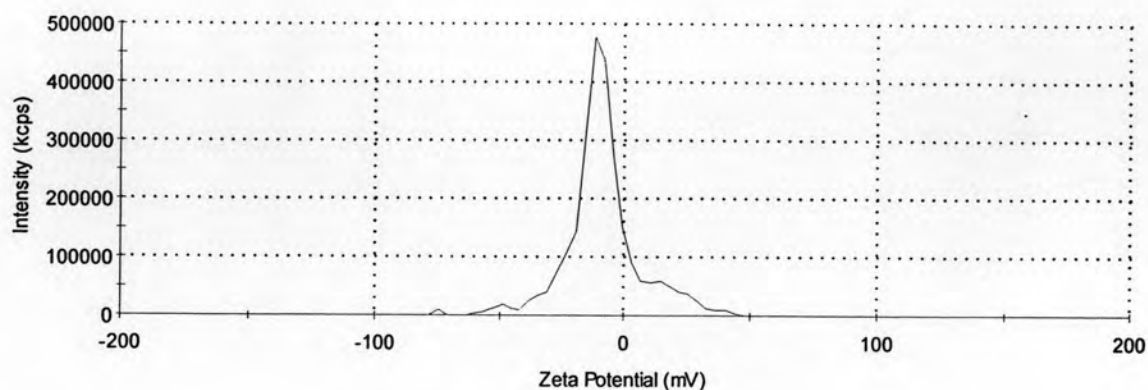


Figure 50 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving fore kept at 4 °C

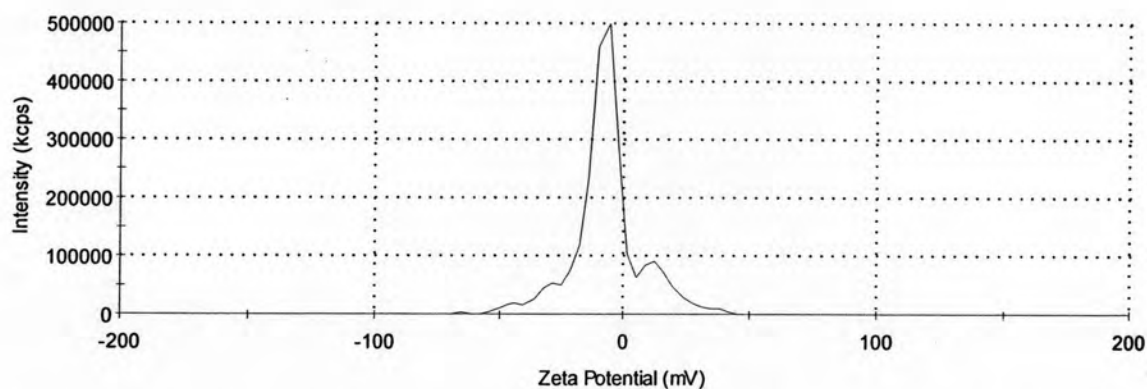


Figure 51 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving fore kept at 4 °C

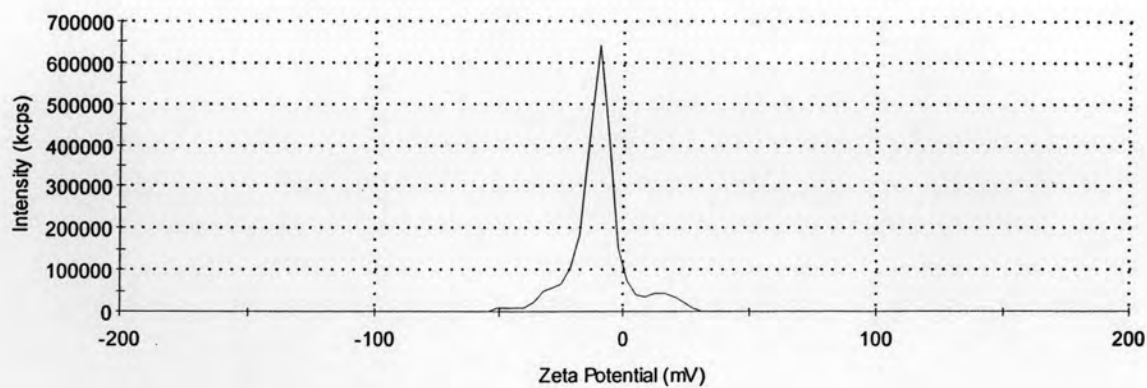


Figure 52 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after storage fore 3 months at 4 °C

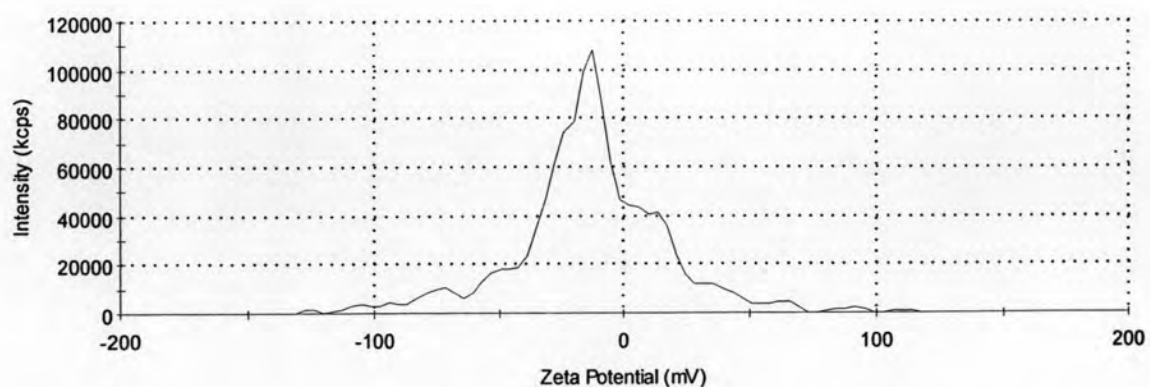


Figure 53 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving fore kept at room temperature

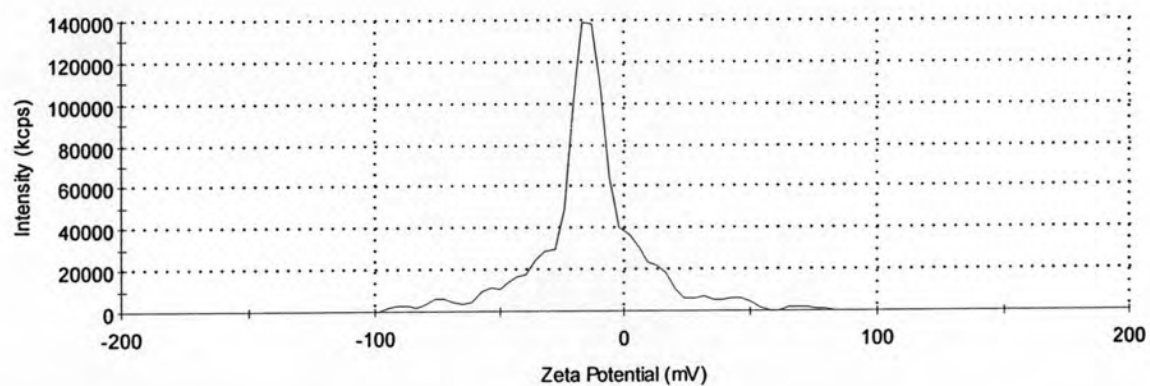


Figure 54 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving fore kept at room temperature

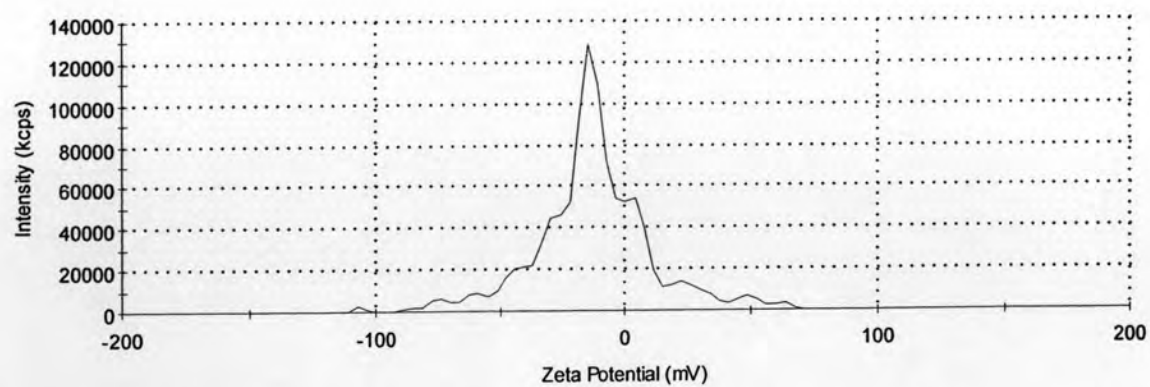


Figure 55 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after storage for 3 months at room temperature

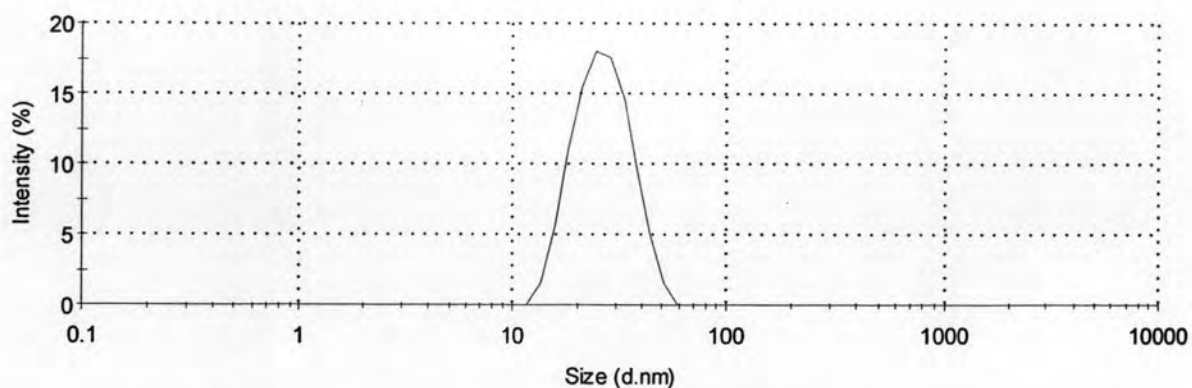


Figure 56 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving for kept at 4 °C

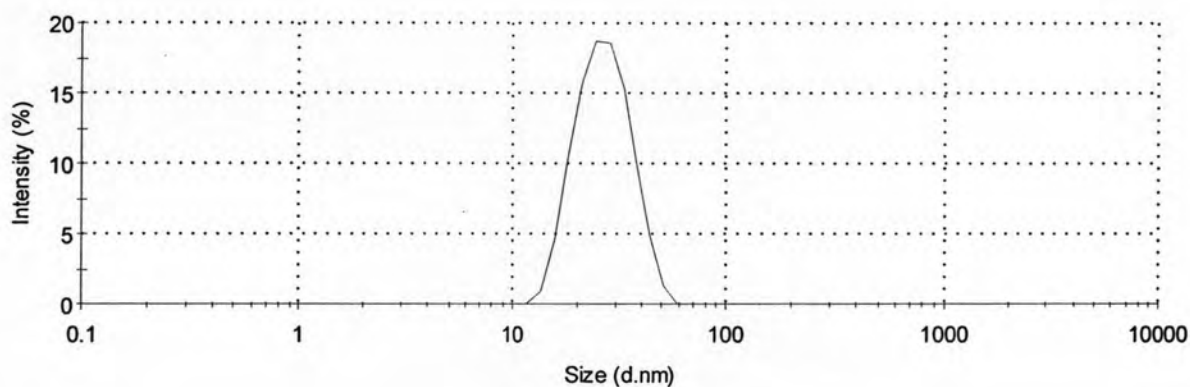


Figure 57 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving for kept at 4 °C

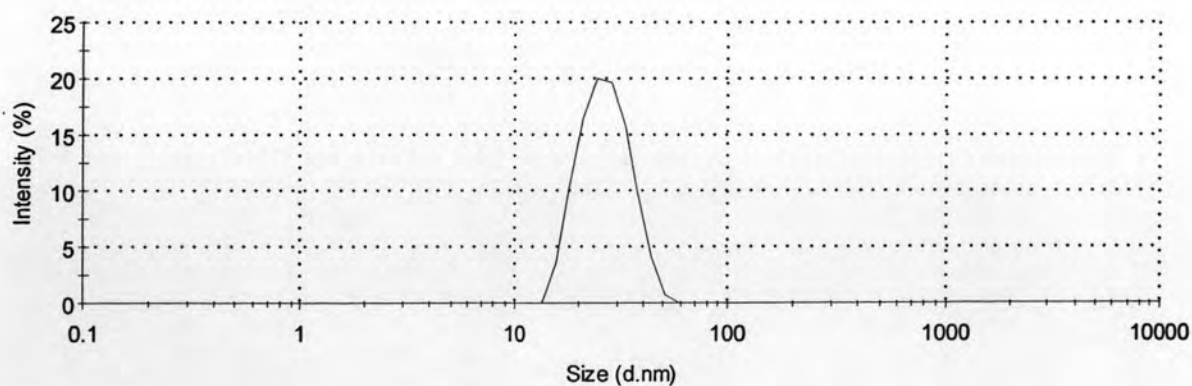


Figure 58 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage for 3 months at 4 °C

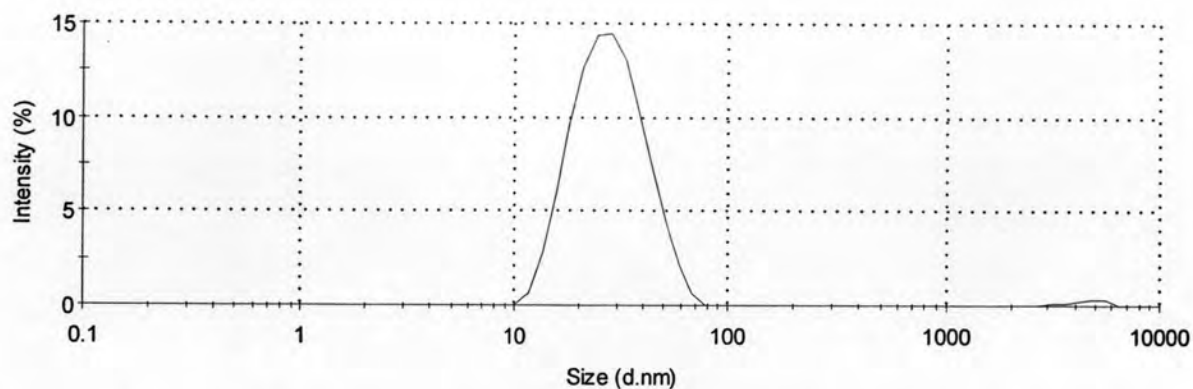


Figure 59 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving for kept at room temperature

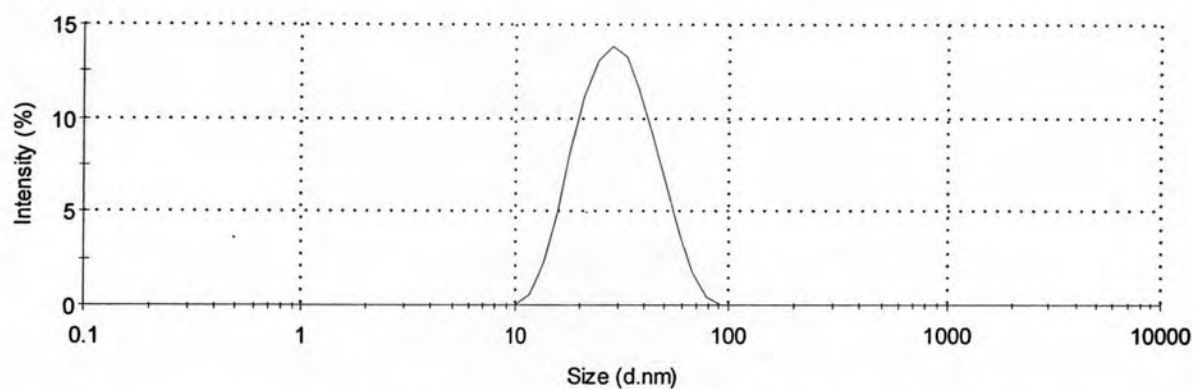


Figure 60 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving for kept at room temperature

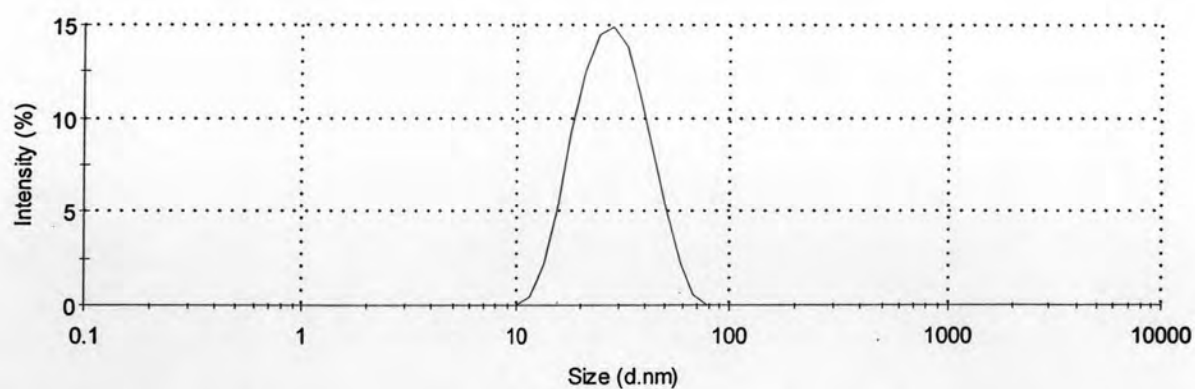


Figure 61 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage for 3 months at room temperature

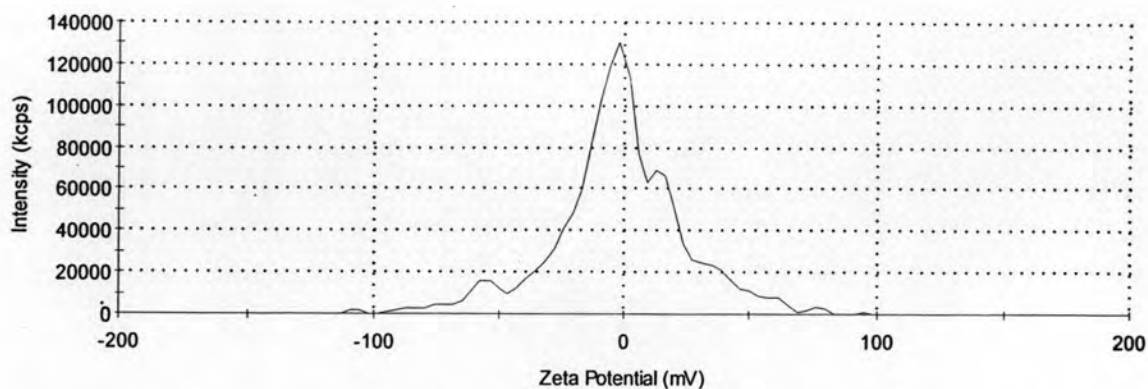


Figure 62 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving fore kept at 4 °C

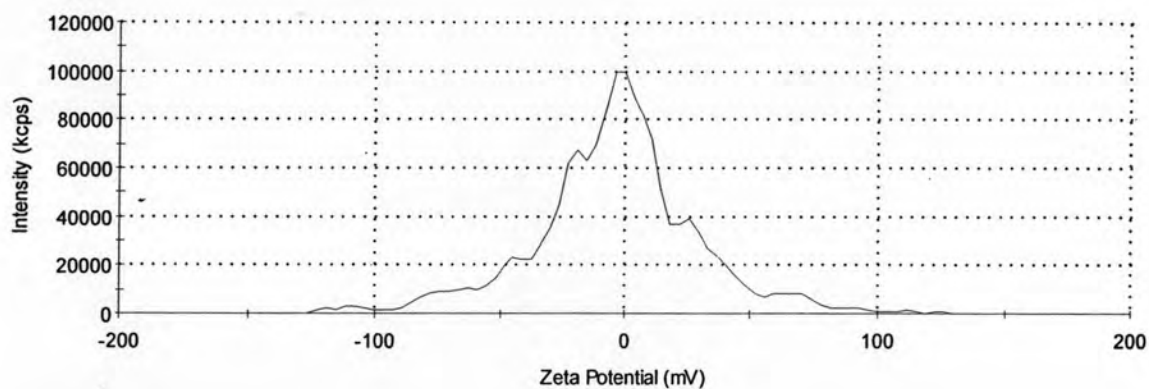


Figure 63 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving fore kept at 4 °C

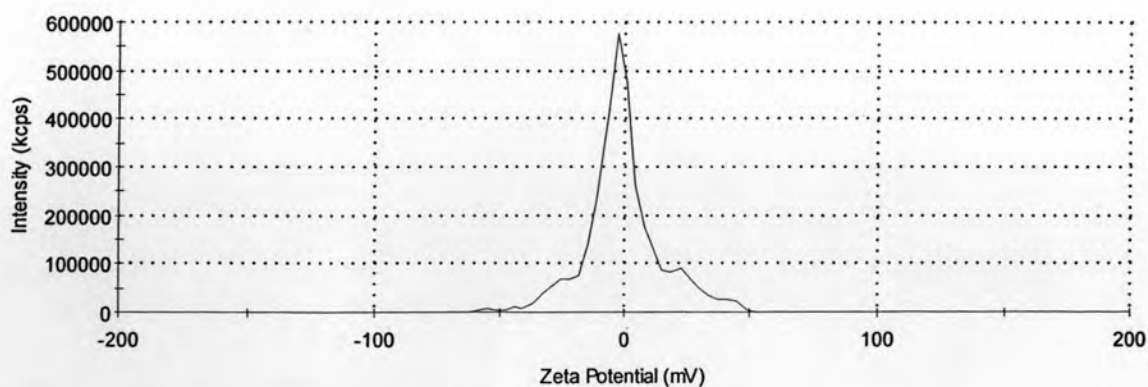


Figure 64 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage for 3 months at 4 °C

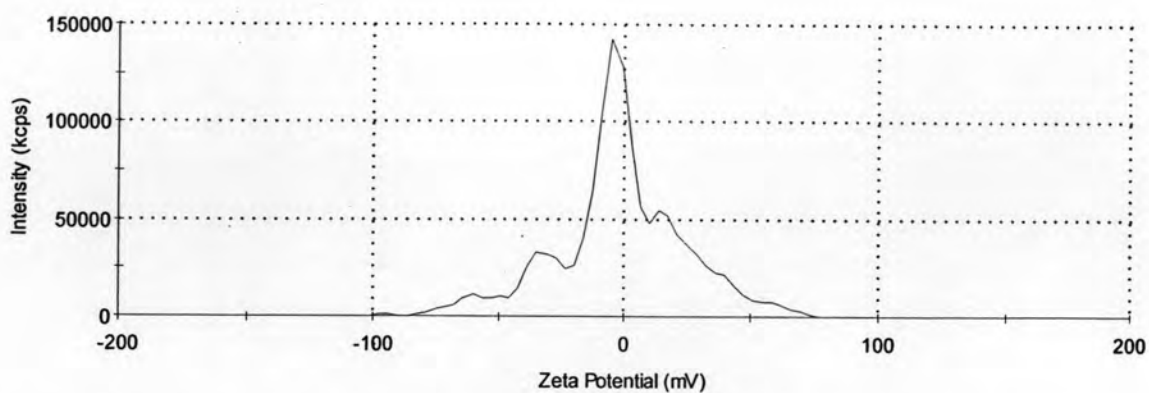


Figure 65 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving fore kept at room temperature

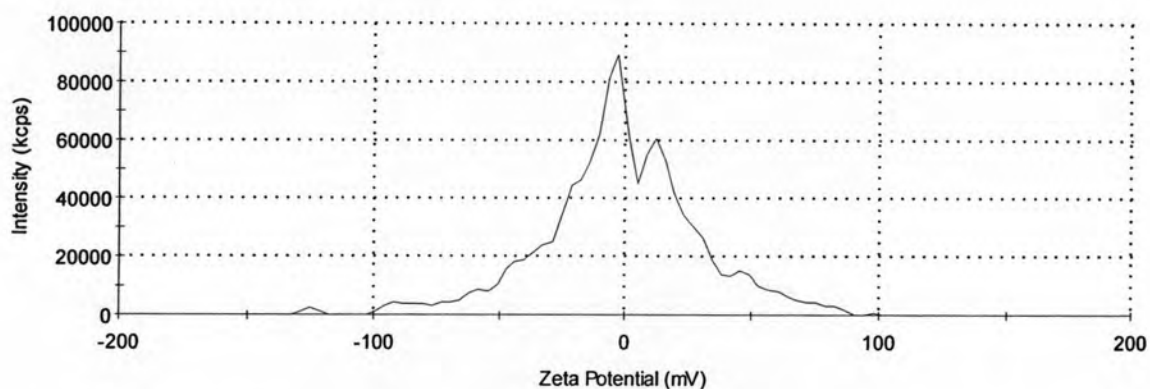


Figure 66 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving fore kept at room temperature

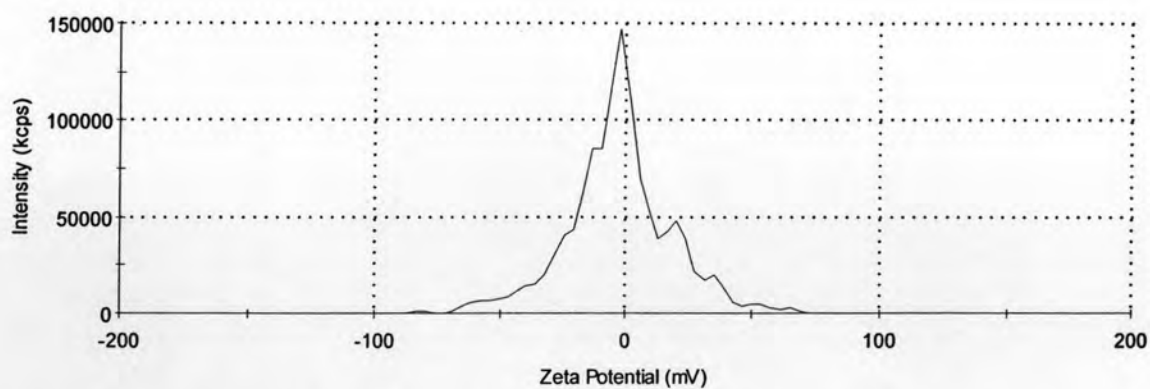


Figure 67 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage for 3 months at room temperature

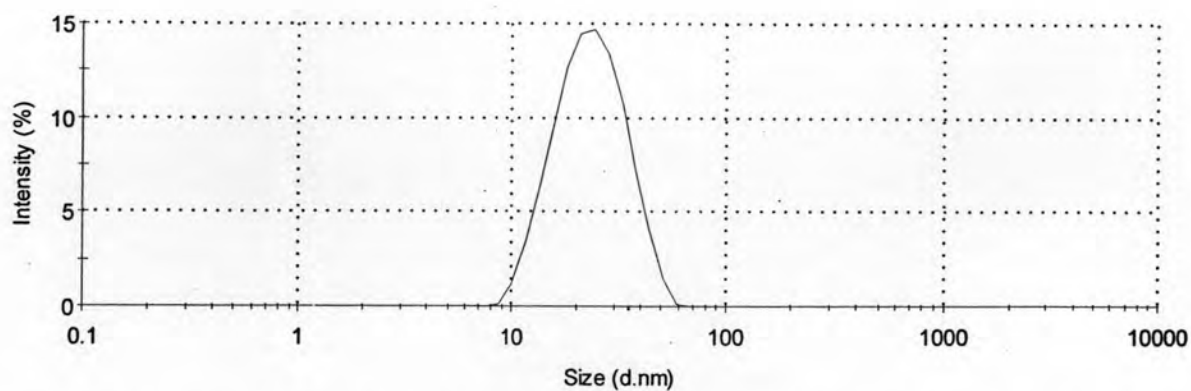


Figure 68 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving for kept at freeze-thaw condition

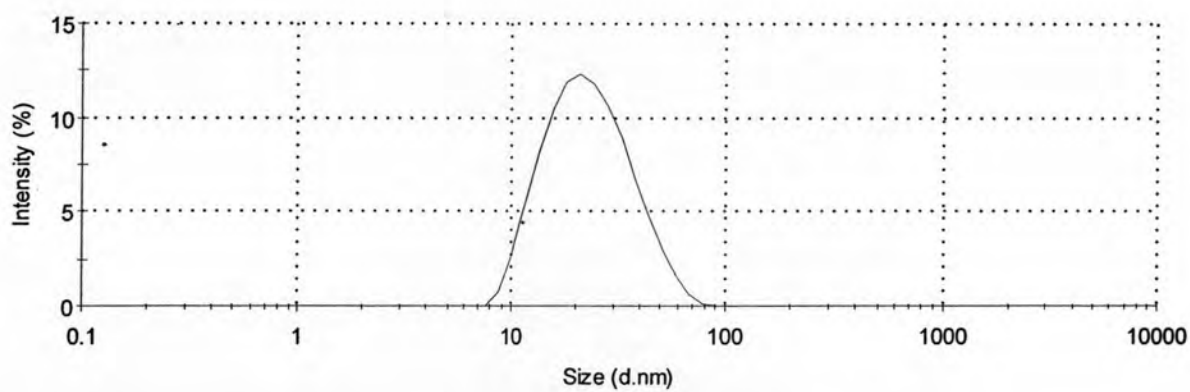


Figure 69 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving for kept at freeze-thaw condition

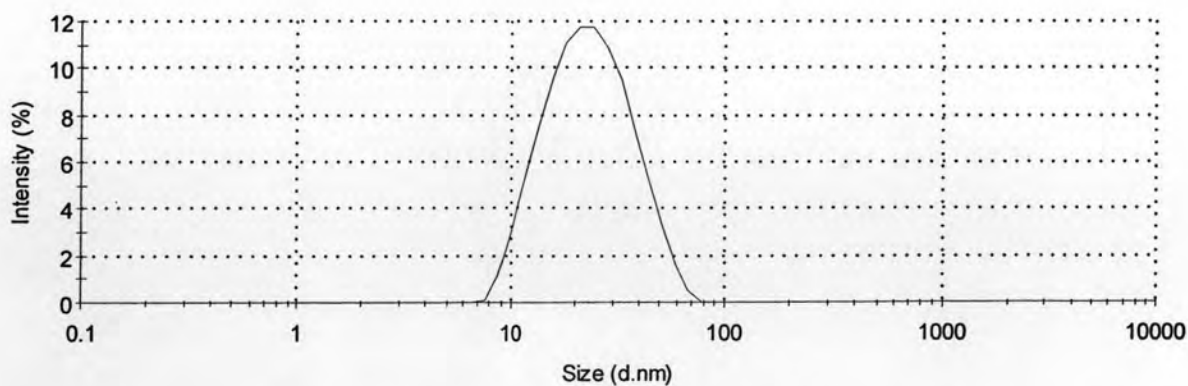


Figure 70 The particle size distribution of AA loaded GC-SLN with T-80:PL-40 (8:2) after storage at freeze-thaw condition

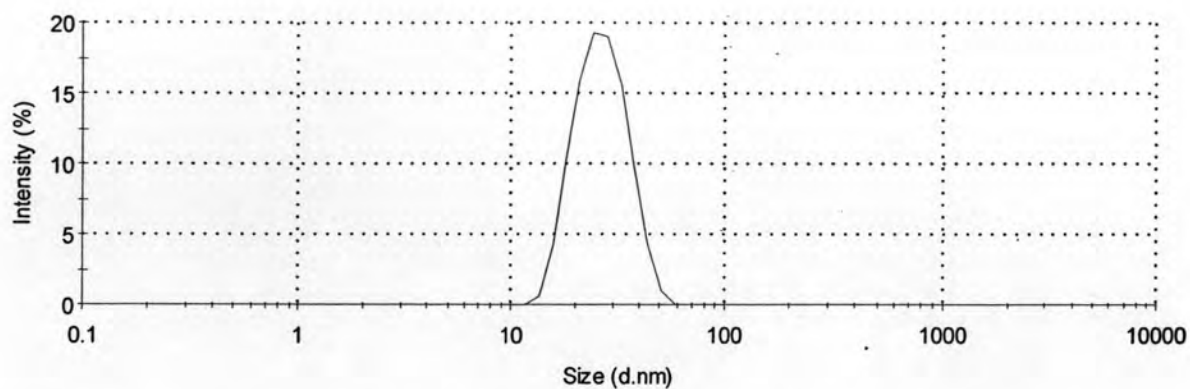


Figure 71 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving for kept at freeze-thaw condition

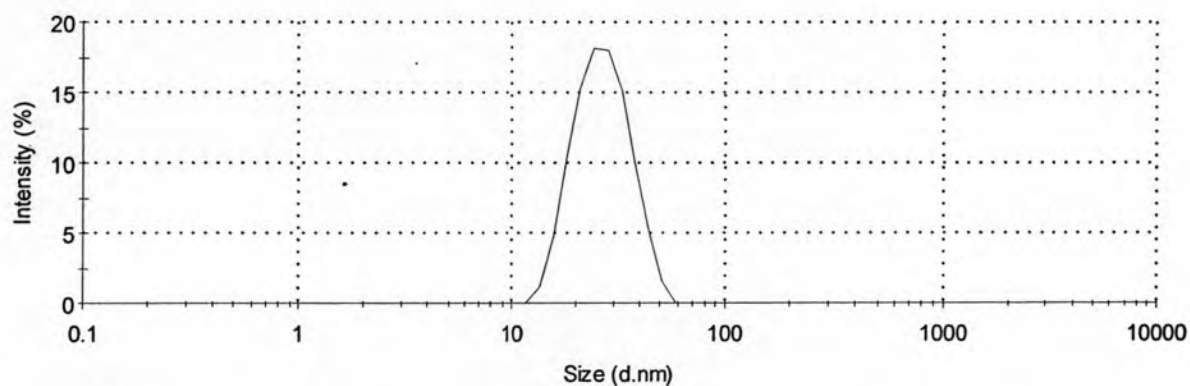


Figure 72 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving for kept at freeze-thaw condition

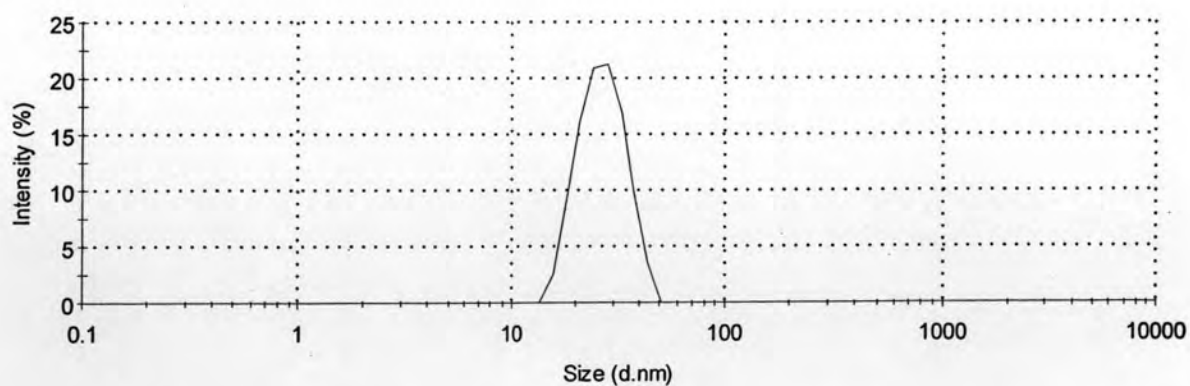


Figure 73 The particle size distribution of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage at freeze-thaw condition

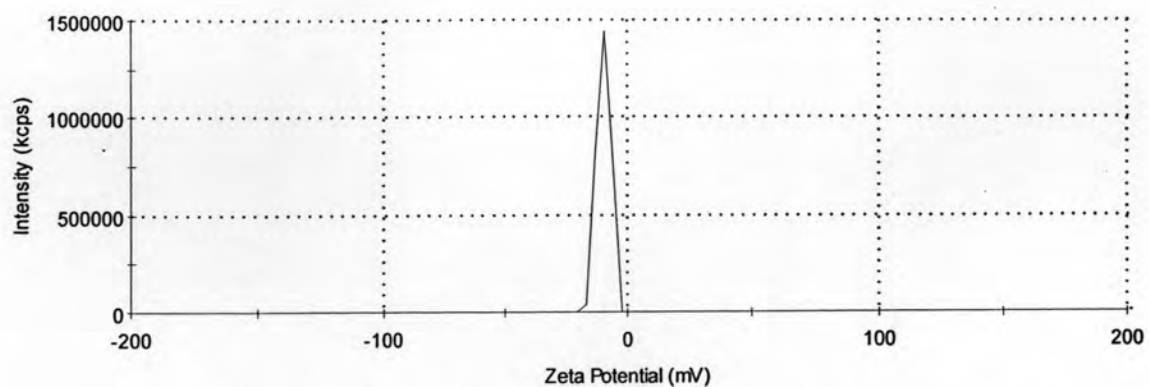


Figure 74 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) before autoclaving for kept at freeze-thaw condition

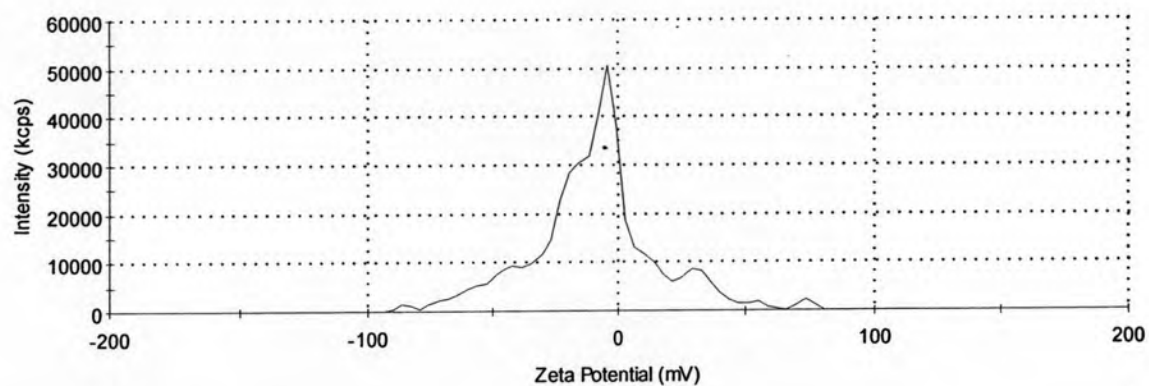


Figure 75 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after autoclaving for kept at freeze-thaw condition

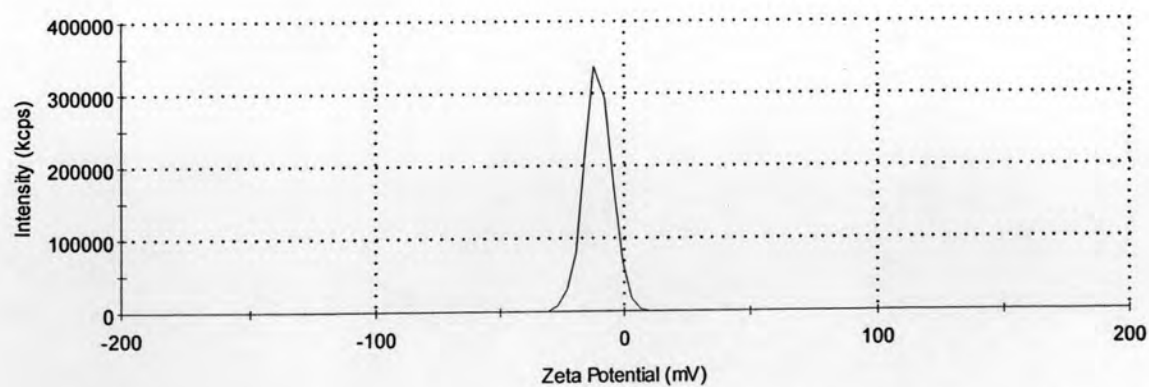


Figure 76 The zeta graph of AA loaded GC-SLN with T-80:PL-40 (8:2) after storage at freeze- thaw condition

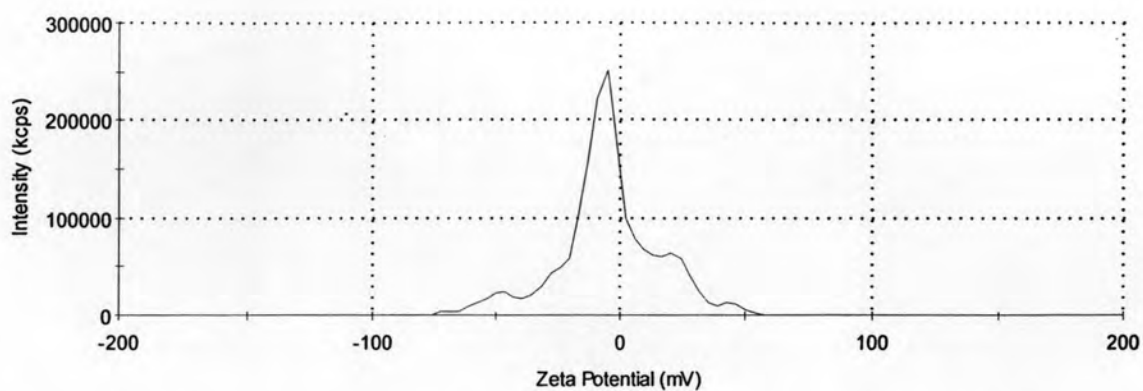


Figure 77 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) before autoclaving for kept at freeze-thaw condition

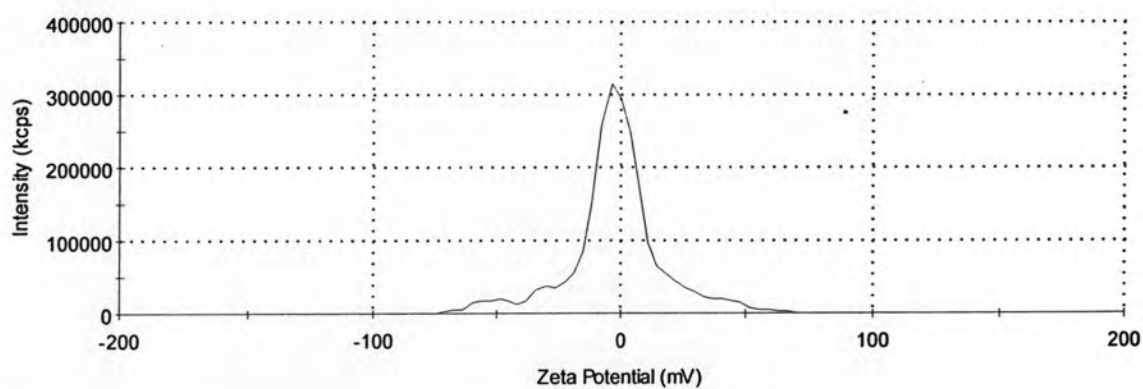


Figure78 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after autoclaving for kept at freeze-thaw condition

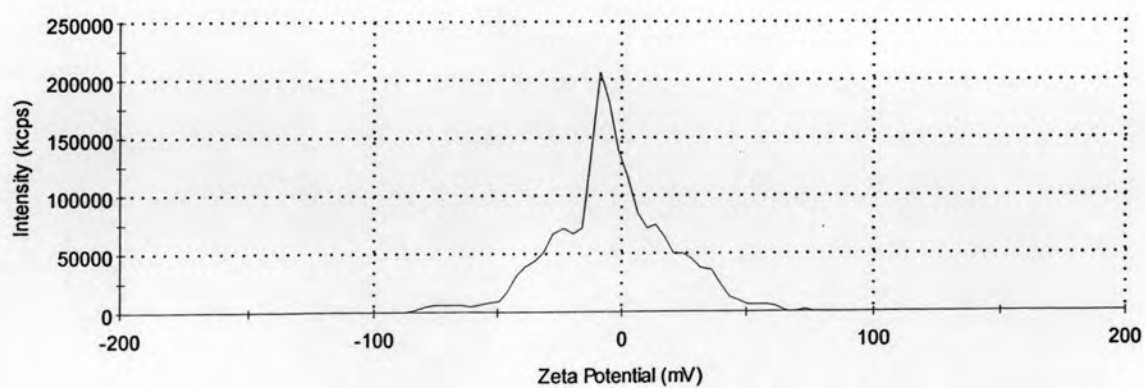


Figure 79 The zeta graph of AA loaded GC-SLN with T-80:PL-90 (8:2) after storage at freeze-thaw condition

Group Statistics

	formula	N	Mean	Std. Deviation	Std. Error Mean
intensity	TL-90	3	4.2833	.28290	.16333
	TL-40	3	3.7367	.48294	.27883

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
intensity	Equal variances assumed	1.802	.251	1.692	4	.166	.54667	.32314	-.35053	1.44386
	Equal variances not assumed			1.692	3.228	.183	.54667	.32314	-.44183	1.53516

Table 80 Independent t-test compare with TL-90 and TL-40

ANOVA

intensity					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.448	1	.448	2.862	.166
Within Groups	.627	4	.157		
Total	1.075	5			

Table 81 One way analysis of variance (ANOVA) compare with TL-90 and TL-40

VITA

Mr. Niphan Ngaecharoenkul was born on June 21, 1983 in Nakornsrithamarat, Thailand. He received the Bachelor of Science in Pharmacy from Faculty of Pharmaceutical Sciences, Rangsit University in 2004.