Synthesis and characterization of gold nanoparticles biosynthesised from *Aspalathus linearis* (Burm.f.) R.Dahlgren for progressive macular hypomelanosis

Supplementary Information

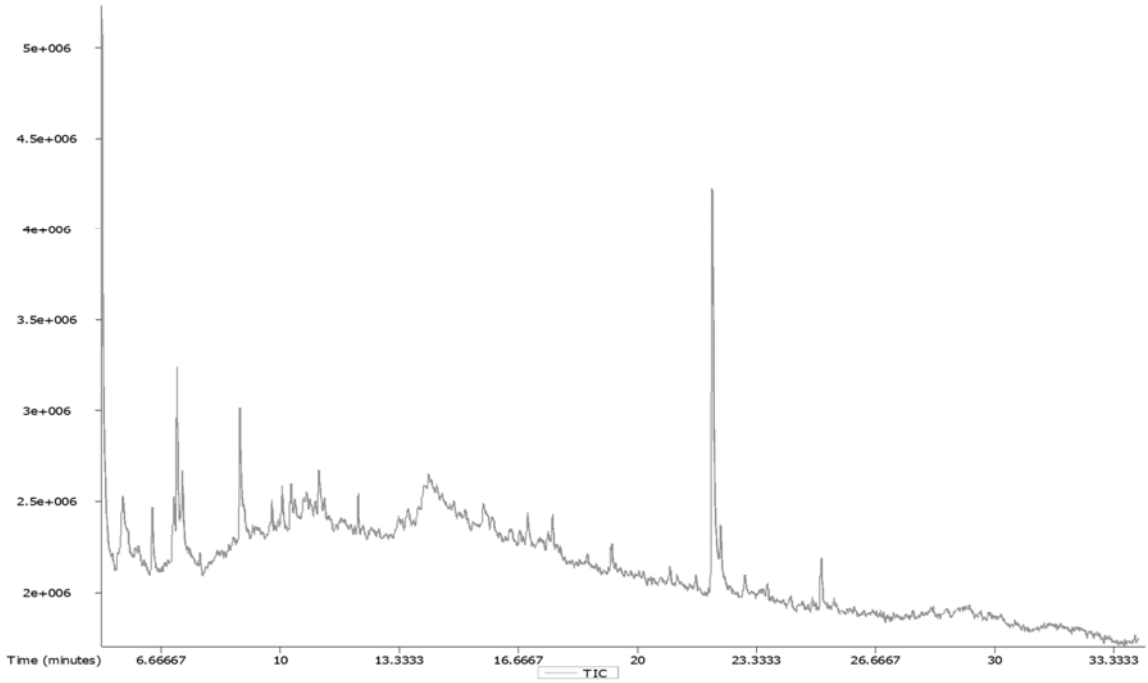

Figure A1. GC-TOFMS spectra of the volatile compound in *Aspalathus linearis* (Burm.f.) R.Dahlgren ethanolic extract

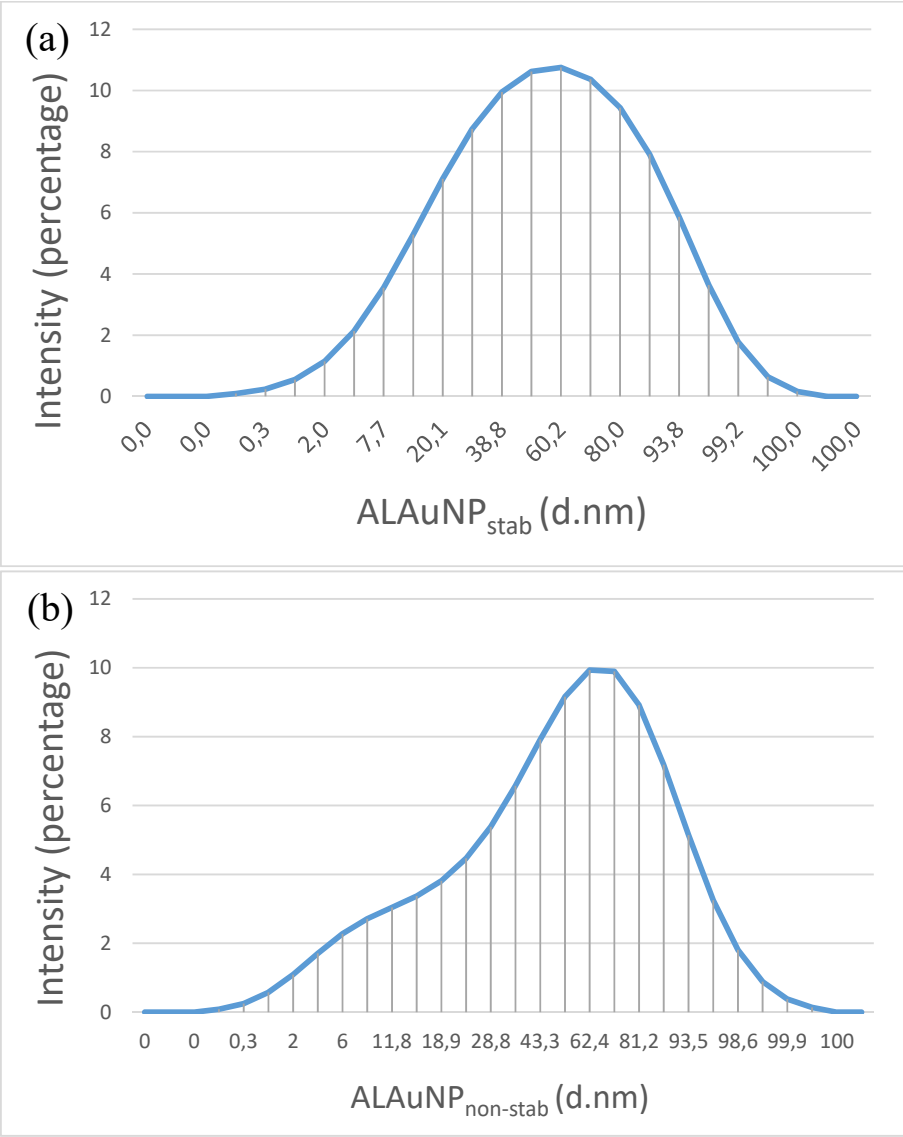

Figure A2. Dynamic light scattering plot for (a) gold nanoparticles stabilised with gum arabic ($ALAuNP_{stab}$) and non-stabilised gold nanoparticles ($ALAuNP_{non\text{-}stab}$) synthesised from the ethanolic extract of *Aspalathus linearis* (Burm.f.) R.Dahlgren.

UV-Vis gold nanoparticles stability data

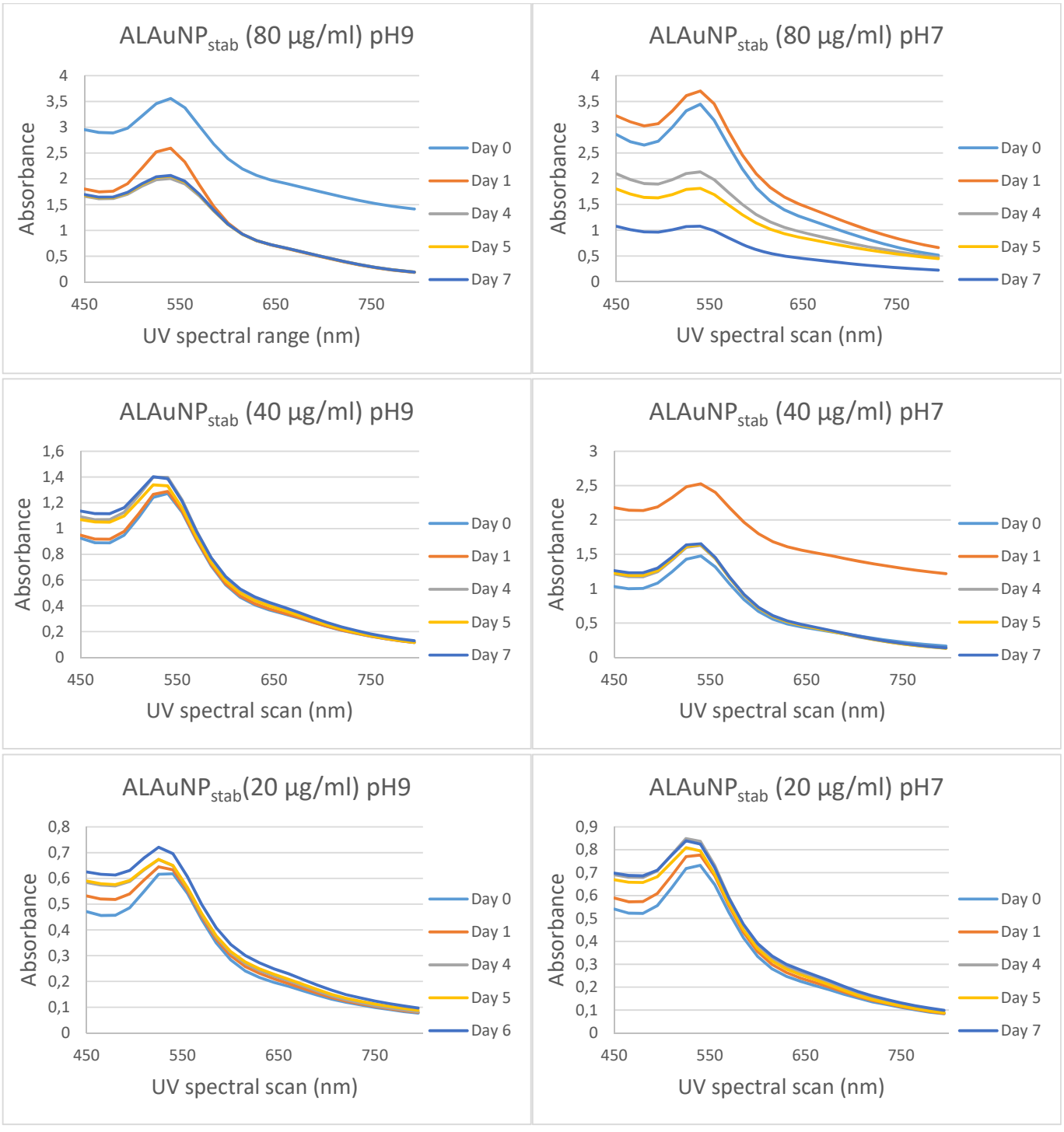

Figure A3. Stability of gum arabic stabilized gold nanoparticles in bovine serum albumin (BSA) buffer

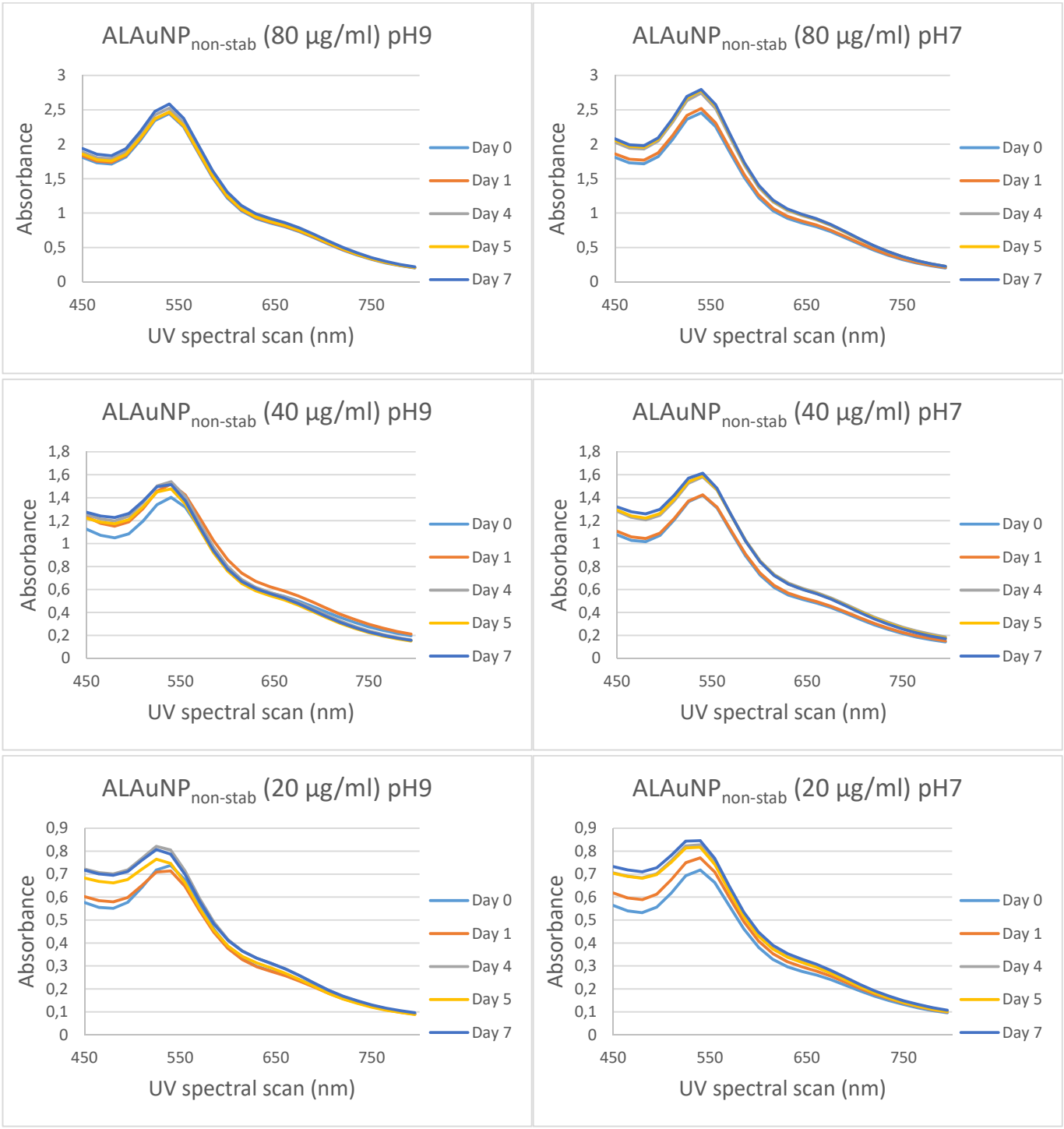

Figure A4. Stability of non-stabilised gold nanoparticles in bovine serum albumin (BSA) buffer

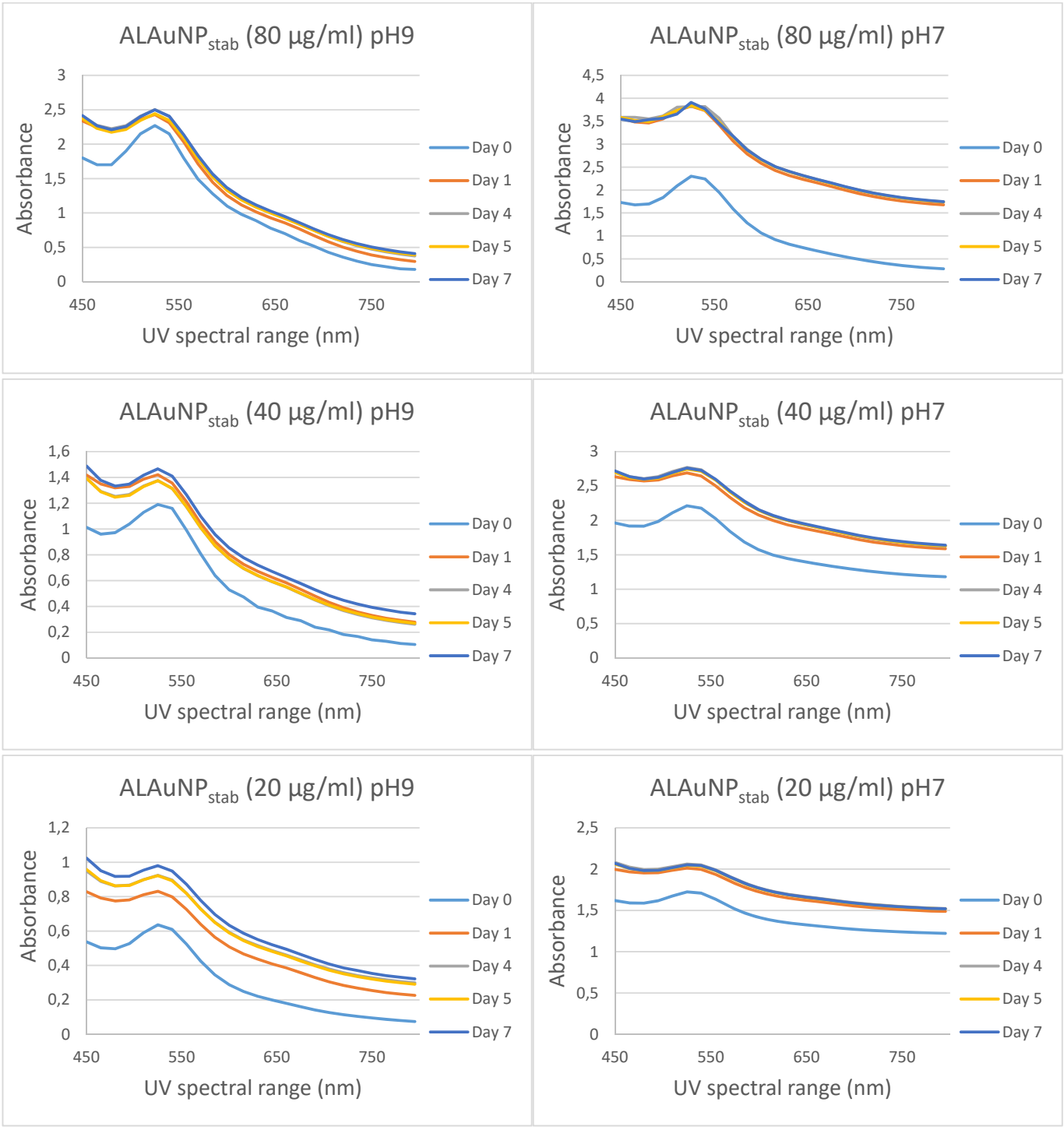

Figure A5. Stability of gum arabic stabilised gold nanoparticles in a cysteine buffer

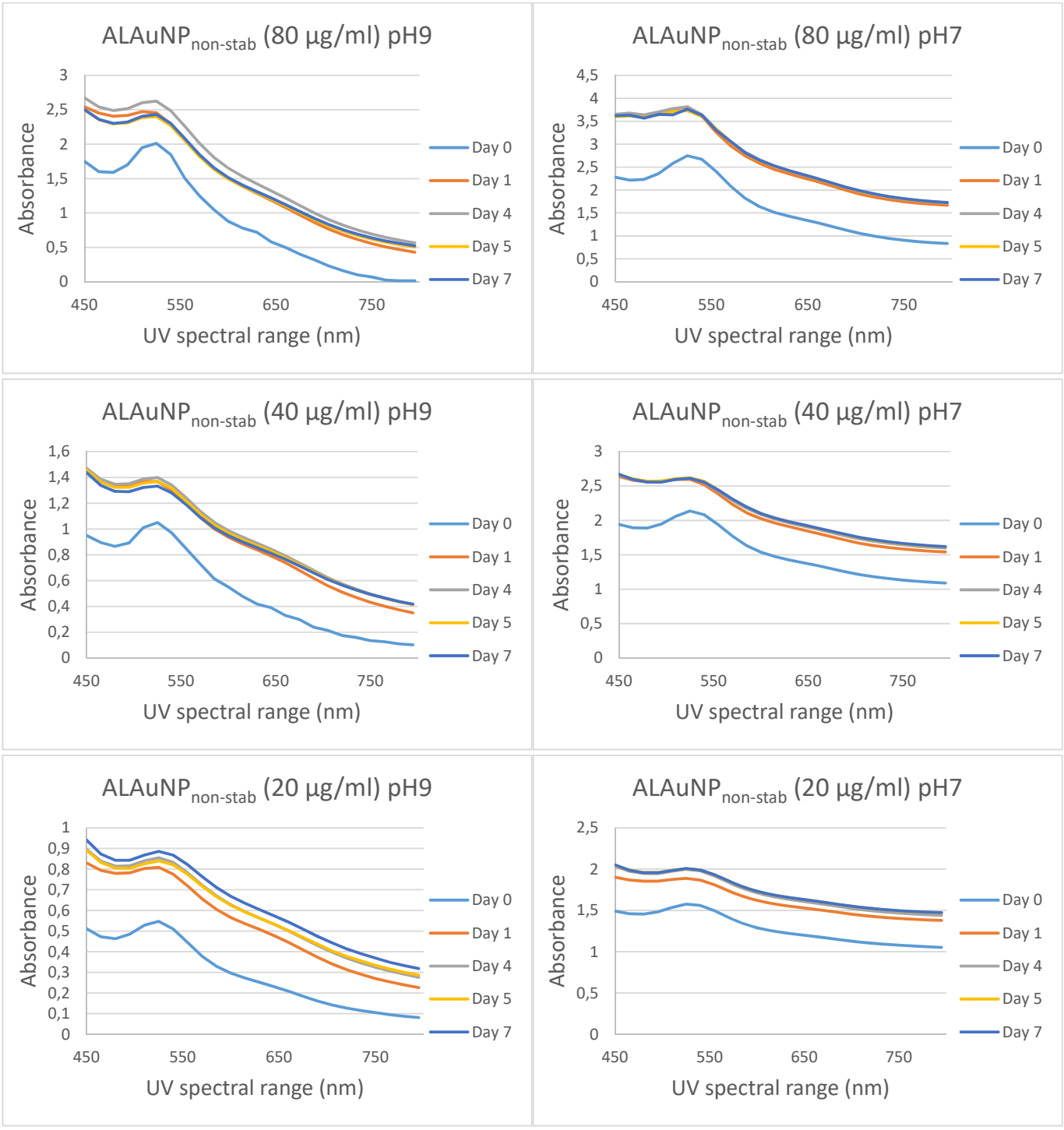

Figure A6. Stability of non-stabilised gold nanoparticles in a cysteine buffer

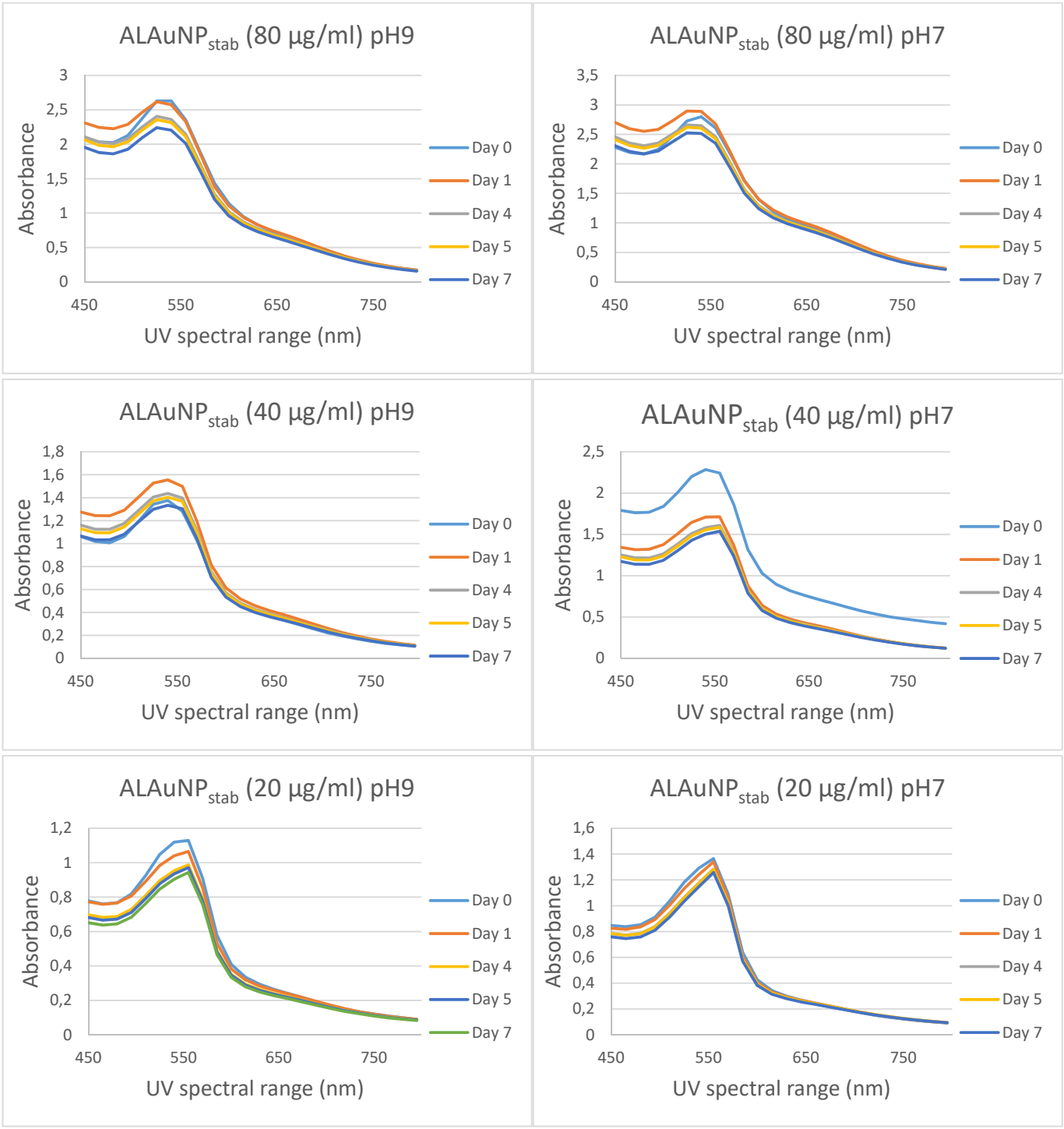

Figure A7. Stability of gum arabic stabilised gold nanoparticles in minimum essential medium

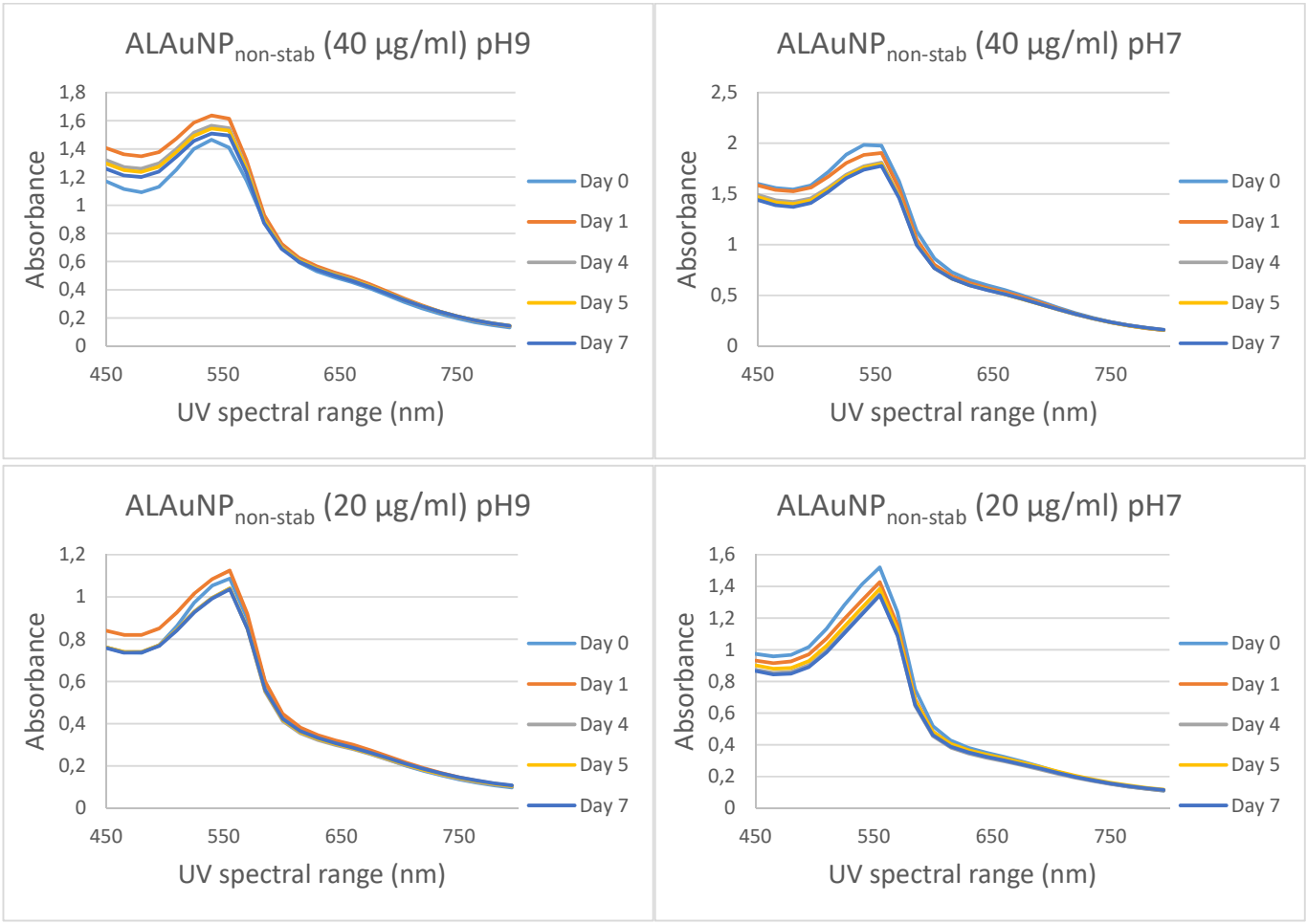

Figure A8. Stability of non-stabilised gold nanoparticles in minimum essential medium

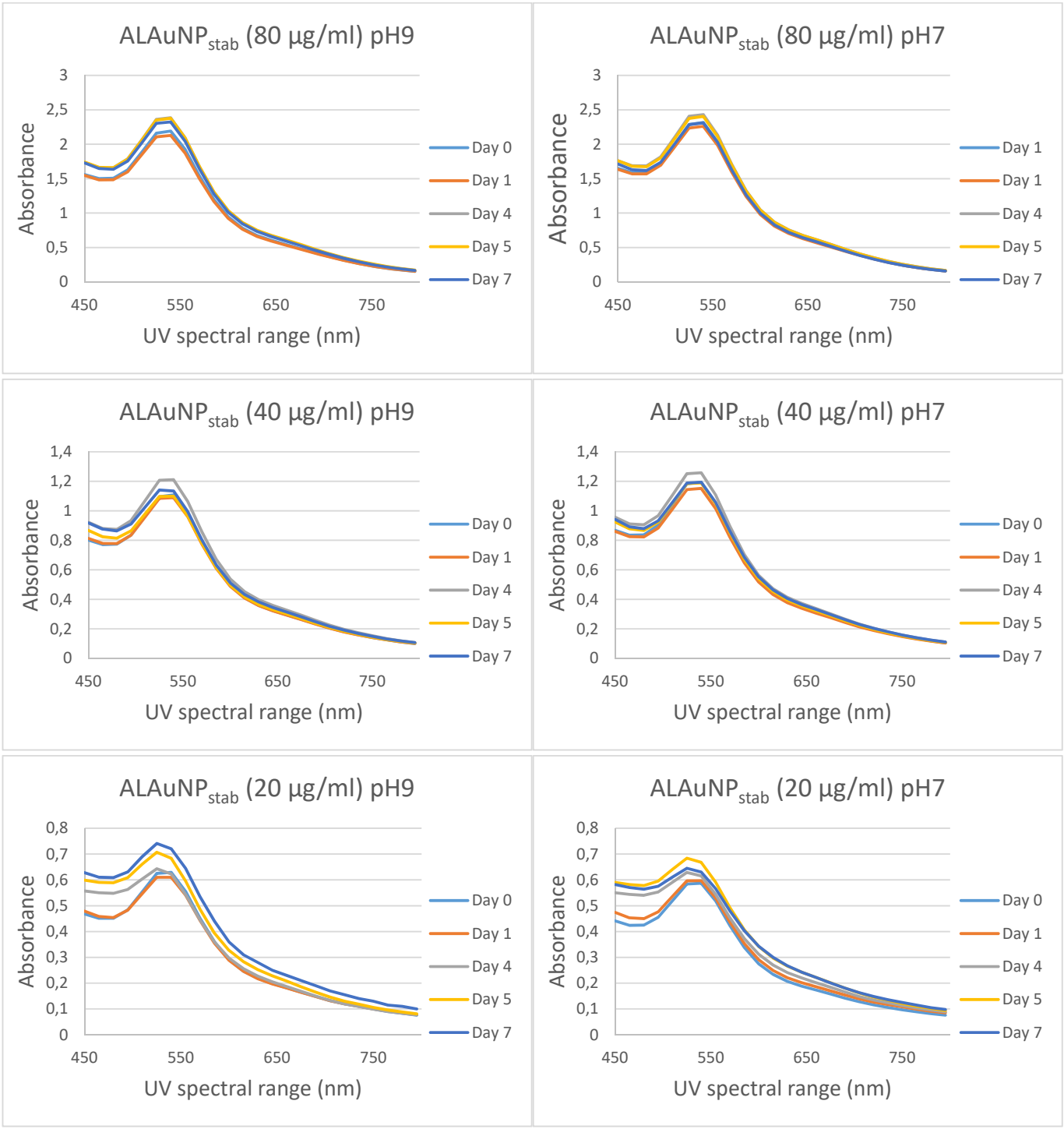

Figure A9. Stability of gum arabic stabilised gold nanoparticles in NaCl

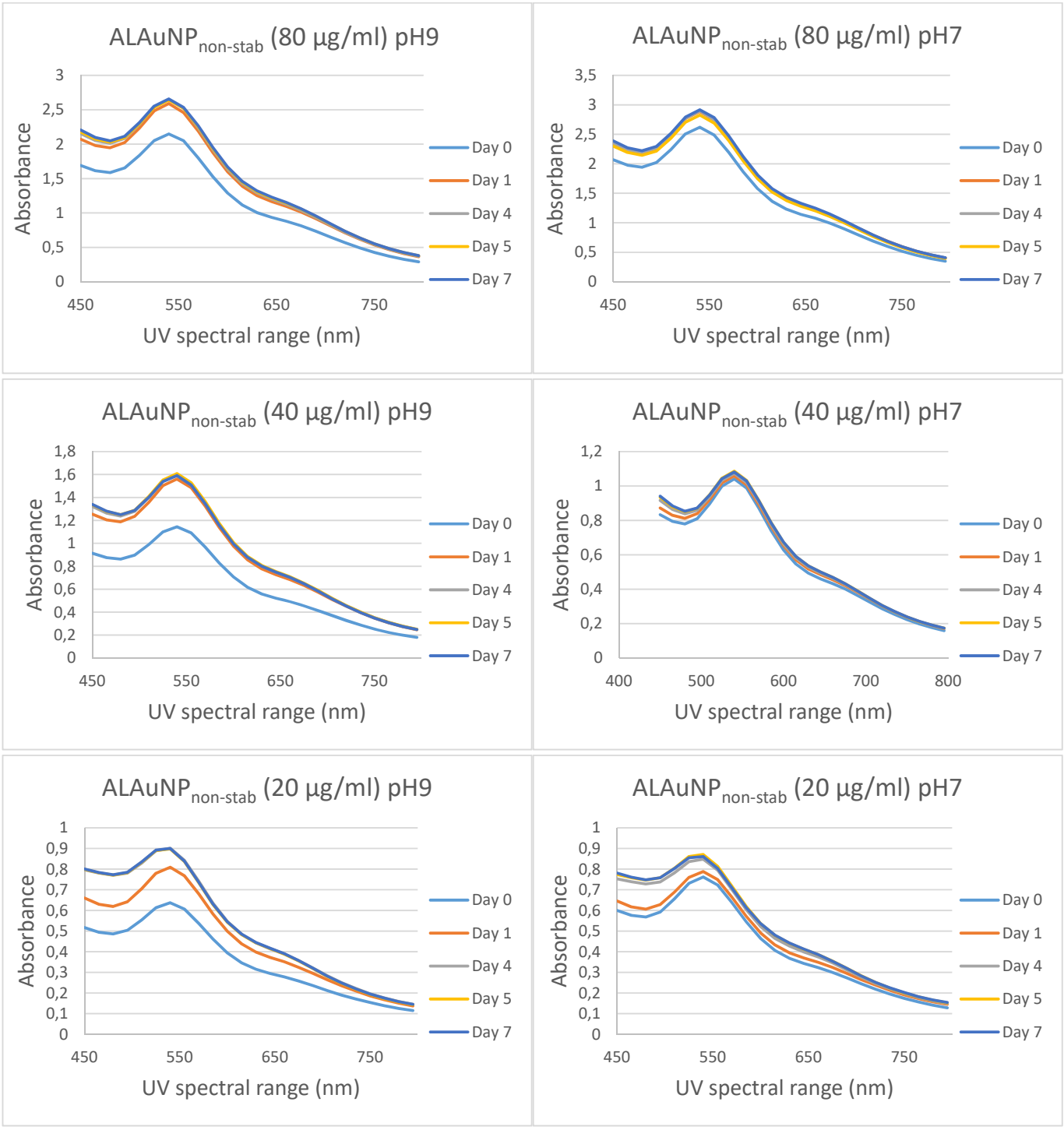

Figure A10. Stability of non-stabilised gold nanoparticles in NaCl

Table A1 One-way analysis of variance and Tukey's Multiple Comparison Test results for the significance between the different *Propionibacterium acnes* treatments

One-way analysis of variance				
P value			P<0.0001	
P value summary			***	
Are means significant different? (P < 0.05)			Yes	
Number of groups			3	
F			837.1	
R squared			0.993	
Bartlett's test for equal variances				
Bartlett's statistic (corrected)			19.79	
P value			P<0.0001	
P value summary			***	
Do the variances differ significant (P < 0.05)			Yes	
ANOVA Table		**SS**	**df**	**MS**
Treatment (between columns)		199800	2	99910
Residual (within columns)		1432	12	119.4
Total		201200	14	
Tukey's Multiple Comparison Test	**Mean Diff.**	**q**	**P value**	**95% CI of diff**
Tetracycline vs AL_{EtOH}	-270.90	55.44	P < 0.001	-289.3 to -252.4
Tetracycline vs ALAuNPs	-65.33	13.37	P < 0.001	-83.76 to -46.89
AL_{EtOH} vs ALAuNPs	205.50	42.07	P < 0.001	187.1 to 224.0

Table A2 One-way analysis of variance and Tukey's Multiple Comparison Test results for the significance between the different intracellular melanin production treatments

Intracellular melanin				
One-way analysis of variance				
P value			P<0.0001	
P value summary			***	
Are means significant different? (P < 0.05)			Yes	
Number of groups			5	
F			52.09	
R squared			0.893	
Bartlett's test for equal variances				
Bartlett's statistic (corrected)			11.82	
P value			0.02	
P value summary			*	
Do the variances differ significant (P < 0.05)			Yes	
ANOVA Table		**SS**	**df**	**MS**
Treatment (between columns)		175.1	4	43.77
Residual (within columns)		21.01	25	0.84
Total		196.1	29	
Tukey's Multiple Comparison Test	**Mean Diff.**	**q**	**P value**	**95% CI of diff**
Control vs a-MSH	-3.6	9.62	P < 0.001	-5.16 to -2.05
Control vs AL_{EtOH}	3.033	8.11	P < 0.001	1.48 to 4.59
Control vs $ALAuNP_{stab}$	2.85	7.62	P < 0.001	1.30 to 4.41
Control vs $ALAuNP_{non\text{-}stab}$	1.067	2.85	P > 0.05	-0.49 to 2.62
a-MSH vs AL_{EtOH}	6.633	17.73	P < 0.001	5.08 to 8.19
a-MSH vs $ALAuNP_{stab}$	6.45	17.24	P < 0.001	4.90 to 8.01
a-MSH vs $ALAuNP_{non\text{-}stab}$	4.67	12.47	P < 0.001	3.11 to 6.22
AL_{EtOH} vs $ALAuNP_{stab}$	-0.18	0.49	P > 0.05	-1.74 to 1.37
AL_{EtOH} vs $ALAuNP_{non\text{-}stab}$	-1.967	5.26	P < 0.01	-3.52 to -0.41
$ALAuNP_{stab}$ vs AuNPs	-1.783	4.77	P < 0.05	-3.34 to -0.23

Table A3 One-way analysis of variance and Tukey's Multiple Comparison Test results for the significance between the different extracellular melanin production treatments

Extracellular melanin				
One-way analysis of variance				
P value		P<0.0001		
P value summary		***		
Are means significant different? (P < 0.05)		Yes		
Number of groups		5		
F		116.7		
R squared		0.95		
Bartlett's test for equal variances				
Bartlett's statistic (corrected)		6.12		
P value		0.19		
P value summary		ns		
Do the variances differ significant (P < 0.05)		No		
ANOVA Table		**SS**	**df**	**MS**
Treatment (between columns)		193.1	4	48.27
Residual (within columns)		10.34	25	0.414
Total		203.4	29	
Tukey's Multiple Comparison Test	**Mean Diff.**	**q**	**P value**	**95% CI of diff**
Control vs a-MSH	-2.91	11.11	P < 0.01	-4.01 to -1.83
Control vs AL_{EtOH}	-6.90	26.28	P < 0.001	-7.99 to -5.81
Control vs $ALAuNP_{stab}$	-6.333	24.12	P < 0.001	-7.42 to -5.24
Control vs $ALAuNP_{non\text{-}stab}$	-2.833	10.79	P < 0.05	-3.92 to -1.74
a-MSH vs AL_{EtOH}	-3.983	15.17	P < 0.001	-5.07 to -2.89
a-MSH vs $ALAuNP_{stab}$	-3.417	13.01	P < 0.001	-4.51 to -2.33
a-MSH vs $ALAuNP_{non\text{-}stab}$	0.08333	0.3174	P > 0.05	-1.01 to 1.17
AL_{EtOH} vs $ALAuNP_{stab}$	0.5667	2.158	P > 0.05	-0.52 to 1.66
AL_{EtOH} vs $ALAuNP_{non\text{-}stab}$	4.067	15.49	P < 0.001	2.98 to 5.16

Table A4 One-way analysis of variance and Tukey's Multiple Comparison Test results for the significance between the different total melanin production treatments

Total melanin				
One-way analysis of variance				
P value		0.0003		
P value summary		***		
Are means significant different? (P < 0.05)		Yes		
Number of groups		5		
F		27.83		
R squared		0.817		
Bartlett's test for equal variances				
Bartlett's statistic (corrected)		11.21		
P value		0.024		
P value summary		*		
Do the variances differ significant (P < 0.05)		Yes		
ANOVA Table		**SS**	**df**	**MS**
Treatment (between columns)		142.8	4	35.69
Residual (within columns)		32.06	25	1.28
Total		174.8	29	
Tukey's Multiple Comparison Test	**Mean Diff.**	**q**	**P value**	**95% CI of diff**
Cells vs a-MSH	-6.58	14.10	P < 0.001	-8.44 to -4.60
Cells vs AL_{EtOH}	-3.87	8.36	P > 0.05	-5.79 to -1.95
Cells vs $ALAuNP_{stab}$	-3.48	7.53	P < 0.05	-5.40 to -1.56
Cells vs $ALAuNP_{non\text{-}stab}$	-1.77	3.82	P > 0.05	-3.69 to 0.16
a-MSH vs AL_{EtOH}	2.65	5.73	P < 0.001	0.73 to 4.57
a-MSH vs $ALAuNP_{stab}$	3.03	6.56	P < 0.001	1.11 to 4.95
a-MSH vs $ALAuNP_{non\text{-}stab}$	4.75	10.27	P < 0.001	2.83 to 6.67
AL_{EtOH} vs $ALAuNP_{stab}$	0.38	0.83	P > 0.05	-1.54 to 2.30
AL_{EtOH} vs $ALAuNP_{non\text{-}stab}$	2.10	4.54	P < 0.01	0.18 to 4.02
$ALAuNP_{stab}$ vs $ALAuNP_{non\text{-}stab}$	1.72	3.71	P < 0.01	-0.20 to 3.64

Table A5 One-way analysis of variance and Tukey's Multiple Comparison Test results for the significance between the different melanin transfer treatments determined with immunofluorescence

One-way analysis of variance				
P value			P<0.0001	
P value summary			***	
Are means significant different? (P < 0.05)			Yes	
Number of groups			4	
F			10.5	
R squared			0.37	
Bartlett's test for equal variances				
Bartlett's statistic (corrected)			2.184	
P value			0.54	
P value summary			ns	
Do the variances differ significant (P < 0.05)			No	
ANOVA Table	**SS**	**df**	**MS**	
Treatment (between columns)	3195	3	1065	
Residual (within columns)	5480	54	101.5	
Total	8676	57		
Tukey's Multiple Comparison Test	**Mean Diff.**	**q**	**P value**	**95% CI of diff**
Untreated vs a-MSH	-16.97	6.07	P < 0.001	-27.46 to -6.48
Untreated vs $ALAuNP_{stab}$	-13.84	5.27	P < 0.01	-23.69 to -3.99
Untreated vs AL_{EtOH}	-20.22	7.49	P < 0.001	-30.35 to -10.09
a-MSH vs $ALAuNP_{stab}$	3.13	1.19	P > 0.05	-6.72 to 12.98
a-MSH vs AL_{EtOH}	-3.25	1.20	P > 0.05	-13.38 to 6.88
$ALAuNP_{stab}$ vs AL_{EtOH}	-6.38	2.53	P > 0.05	-15.85 to 3.09