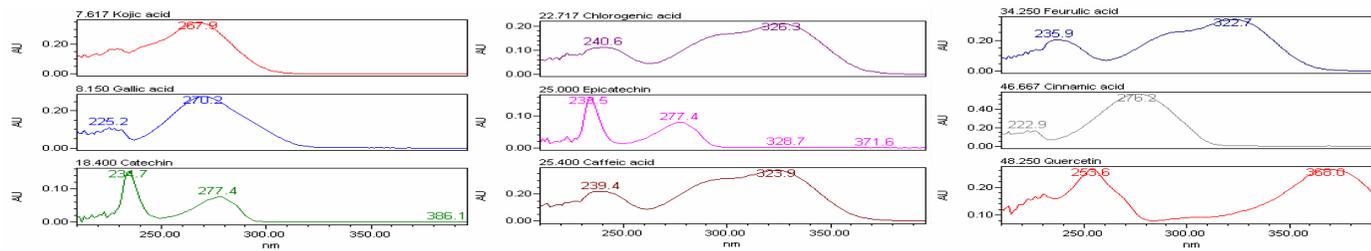
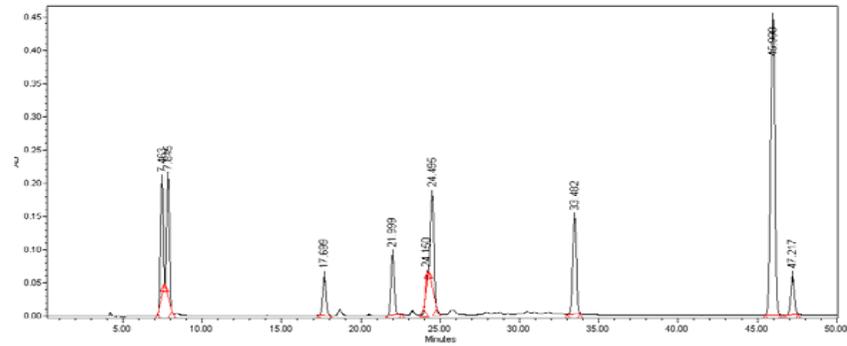


APPENDICIES

APPENDIX A

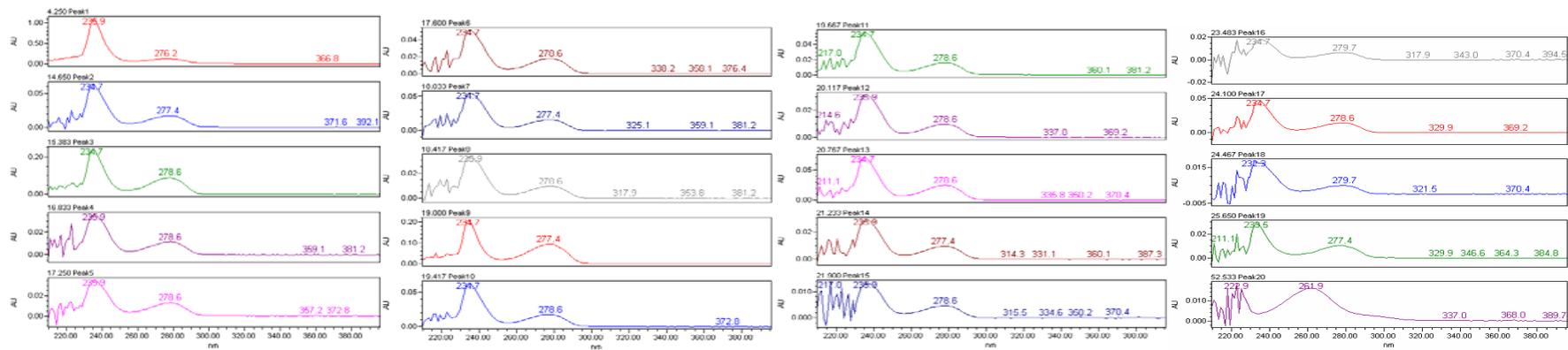
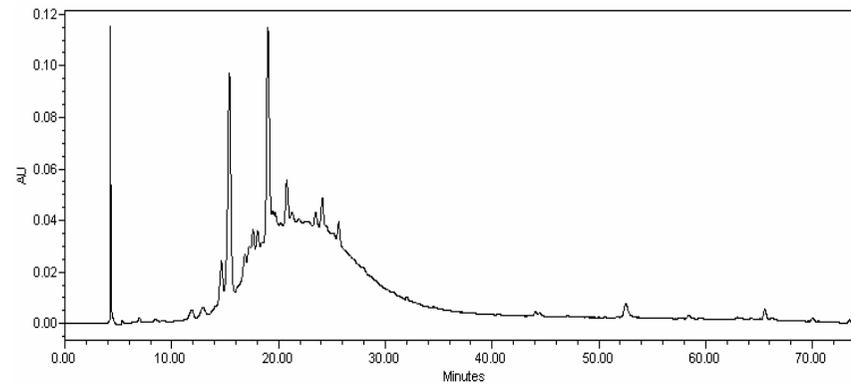
Spectrum of phenolic standards



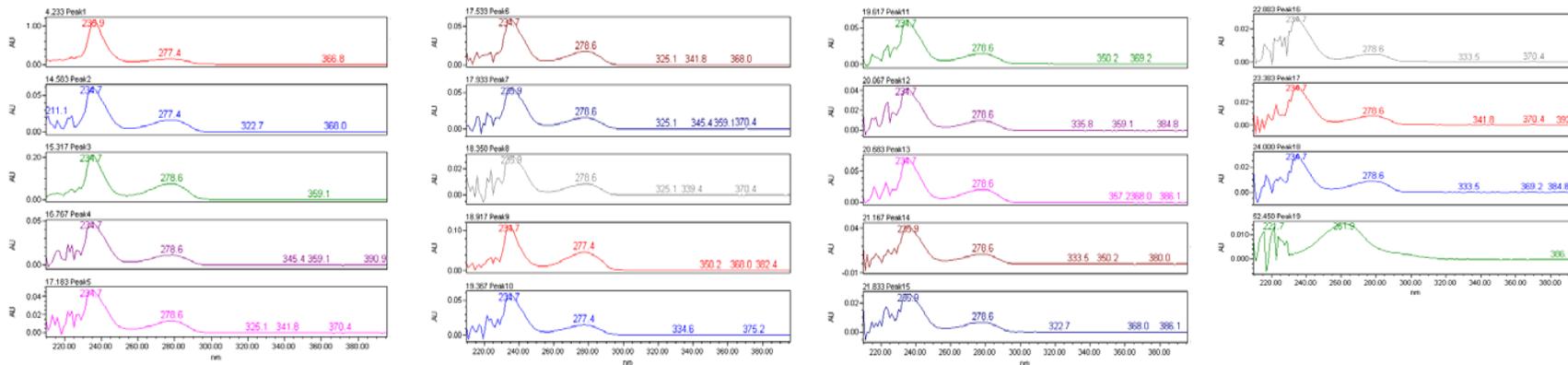
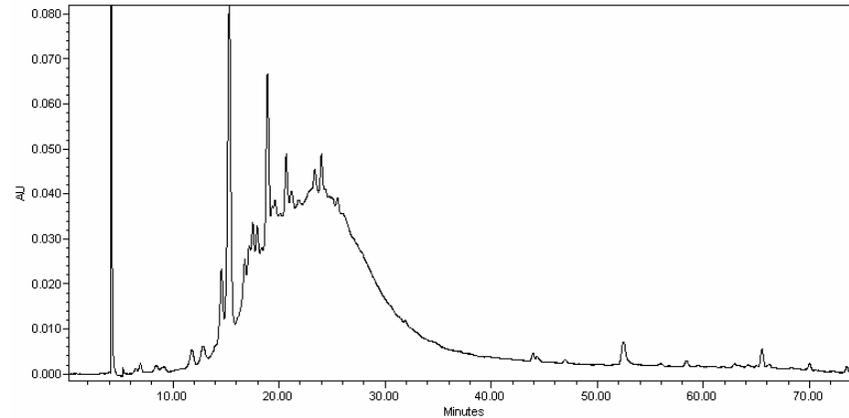
APPENDIX B

Spectrum of betel nut extracts from the different sample

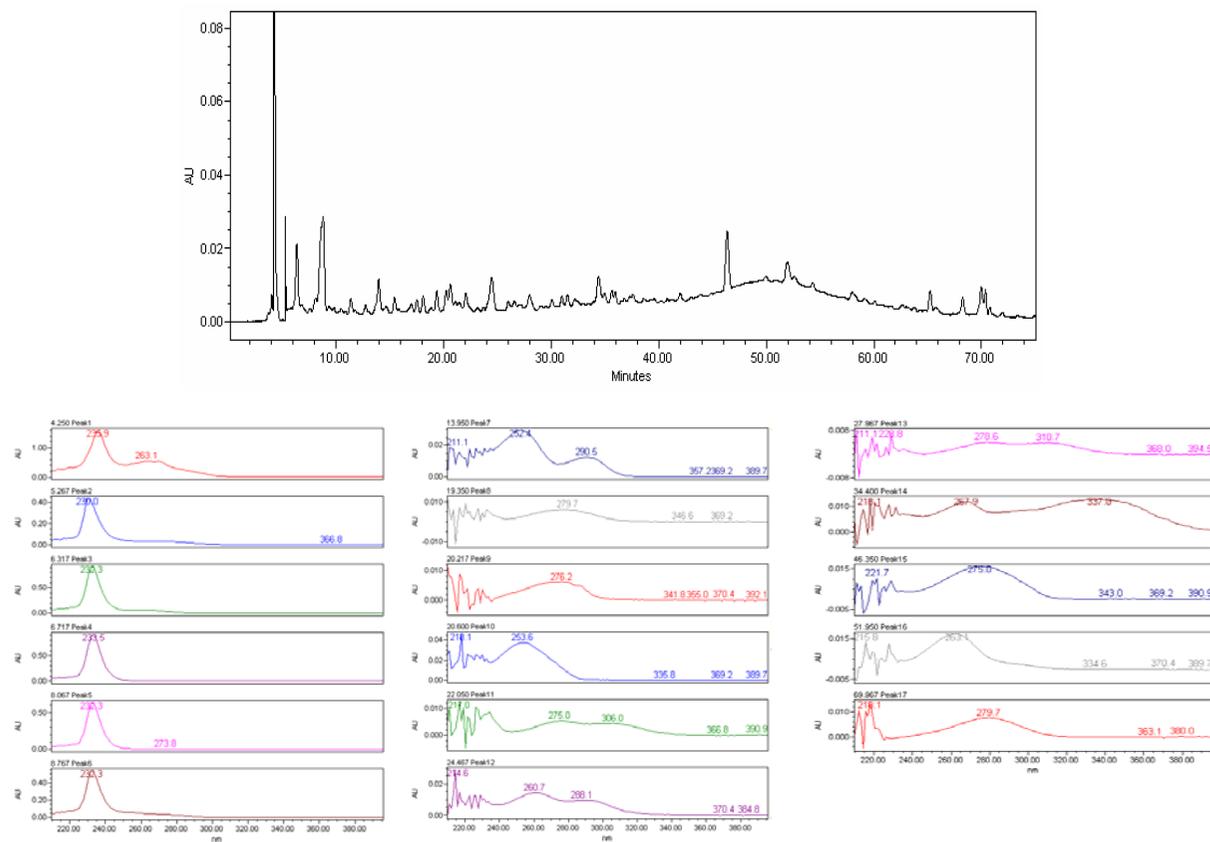
Spectrum of raw betel nut seed extract prepared by microwave-assistance



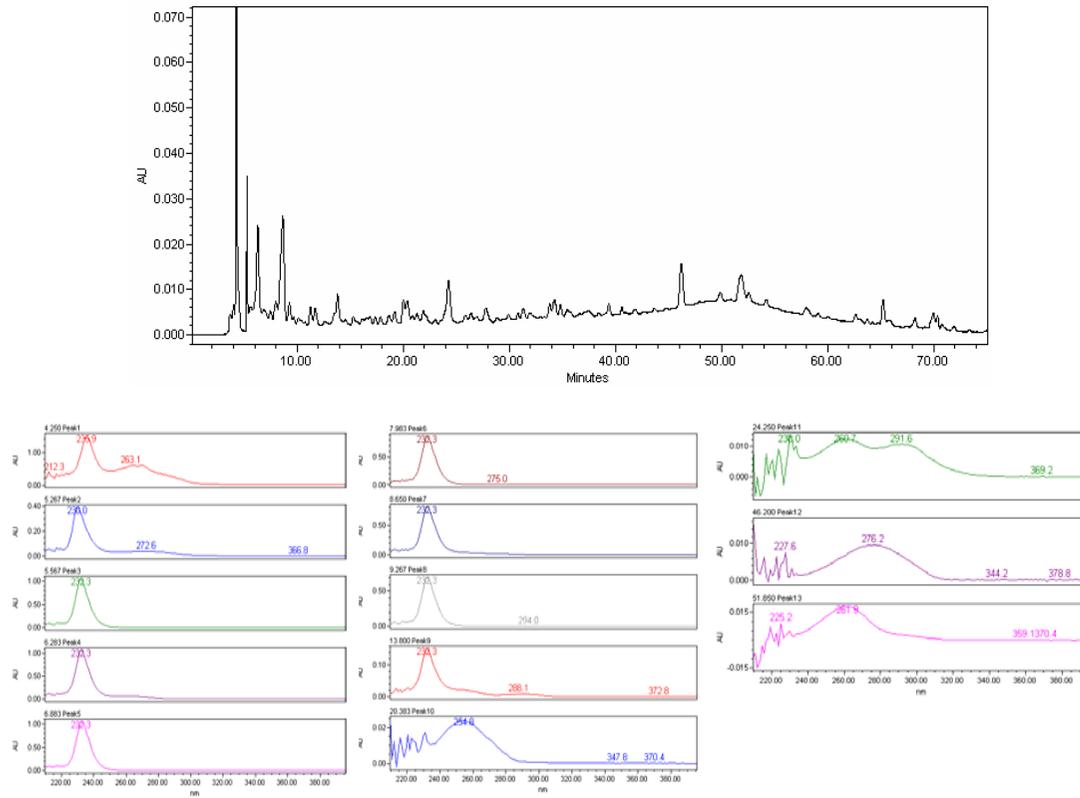
Spectrum of ripe betel nut seed extract prepared by microwave-assistance



Spectrum of raw betel nut pericarp extract prepared by microwave assistance



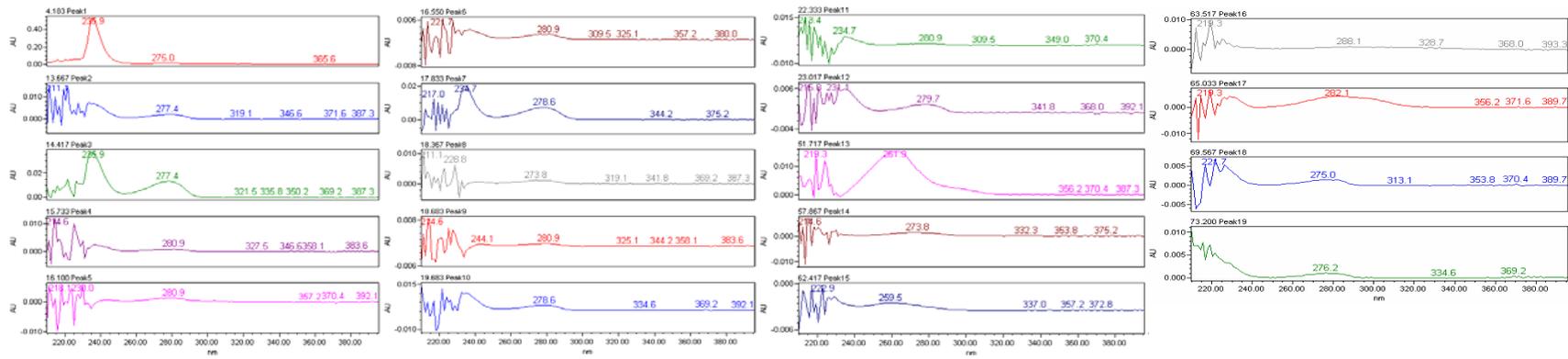
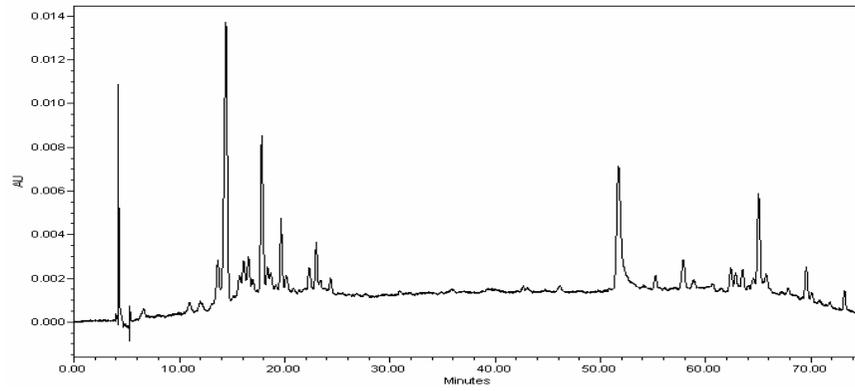
Spectrum of ripe betel nut pericarp extract prepared by microwave assistance



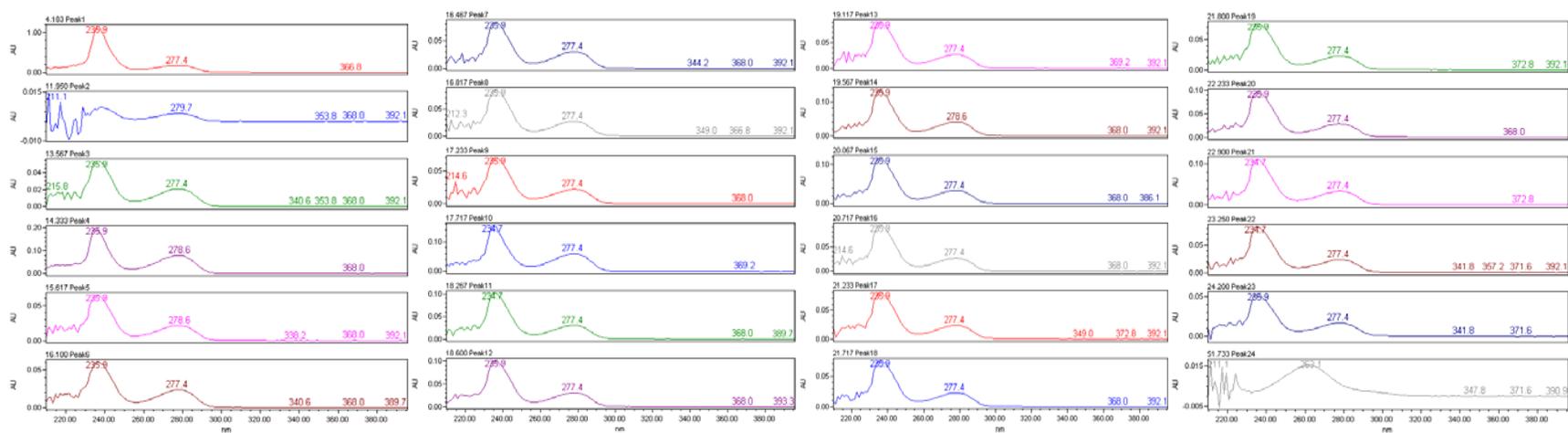
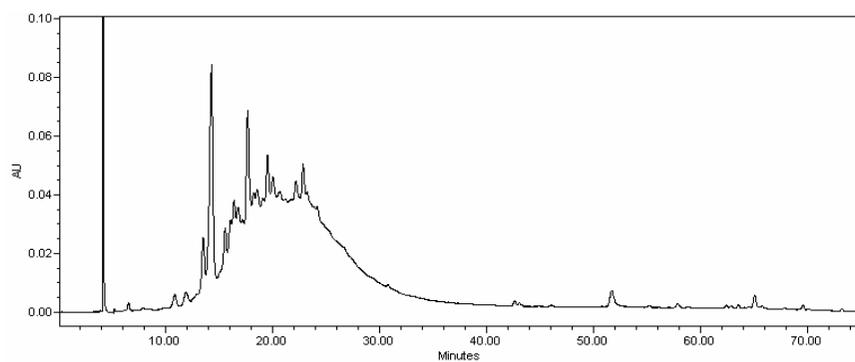
APPENDIX C

Spectrum of betel nut extracts from the different solvent

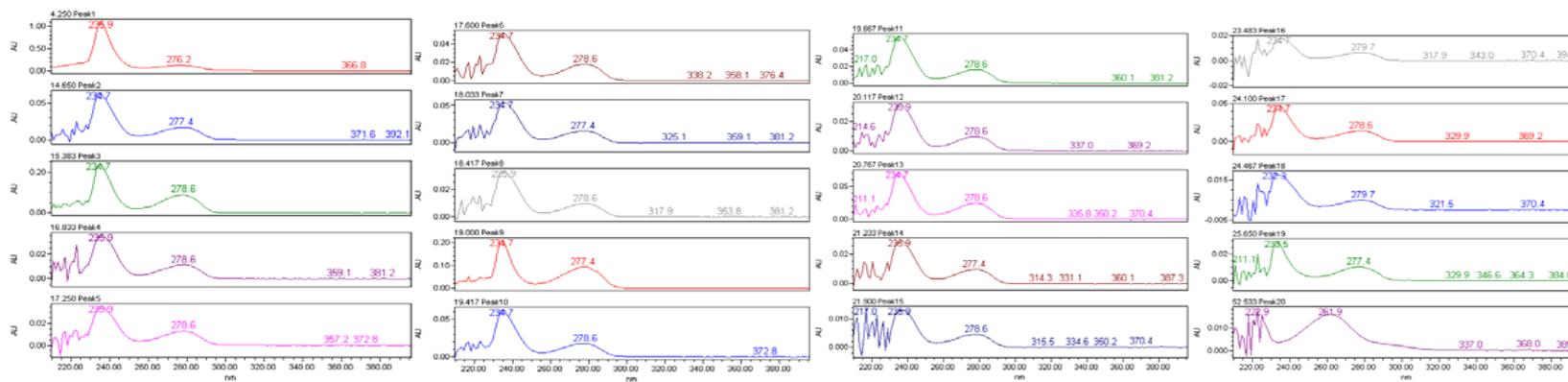
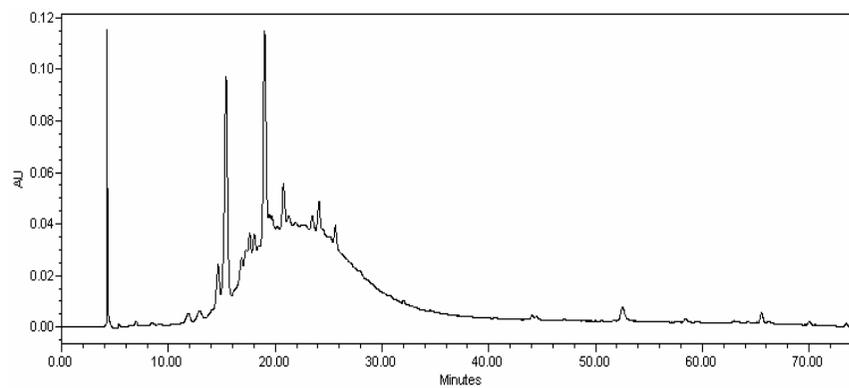
Spectrum of raw betel nut seed ethyl acetate extract



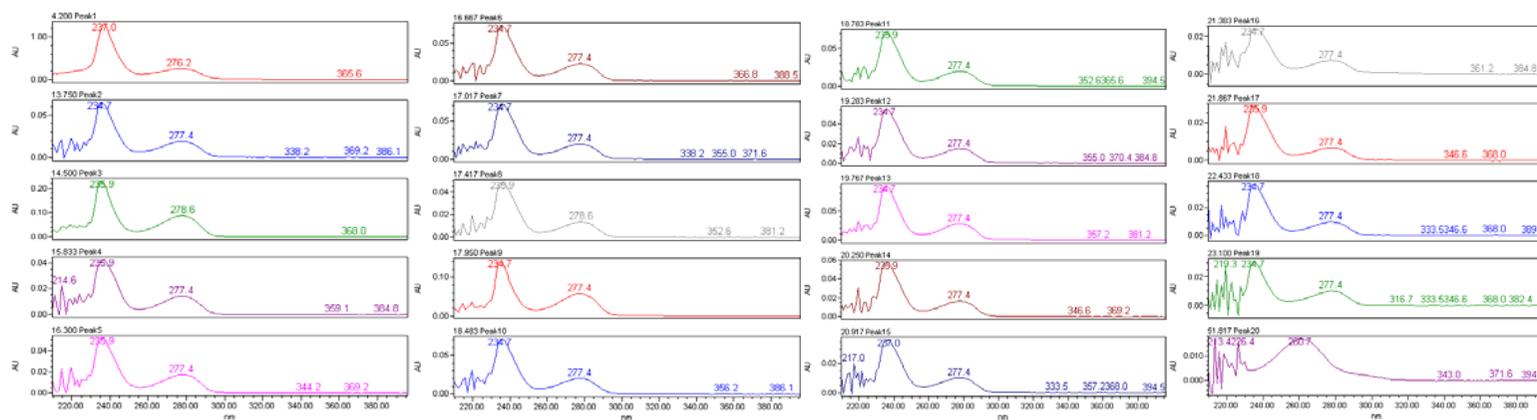
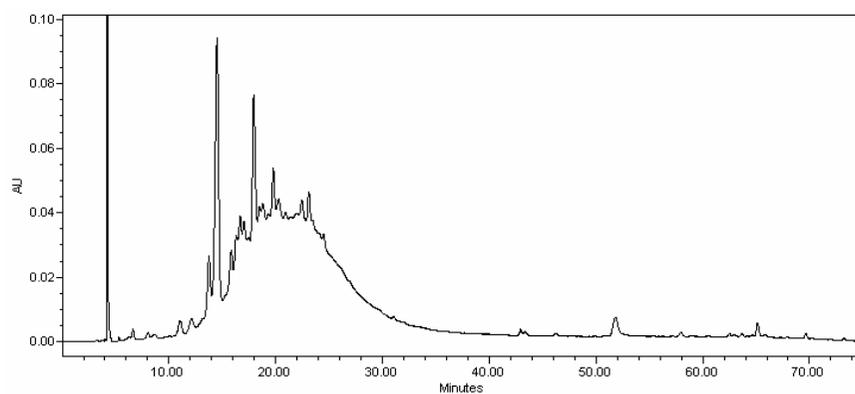
Spectrum of raw betel nut seed 95%ethanol extract



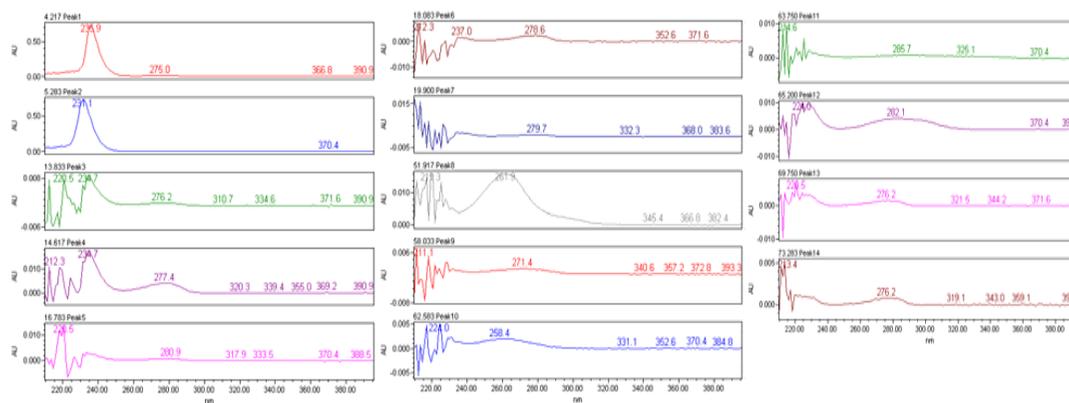
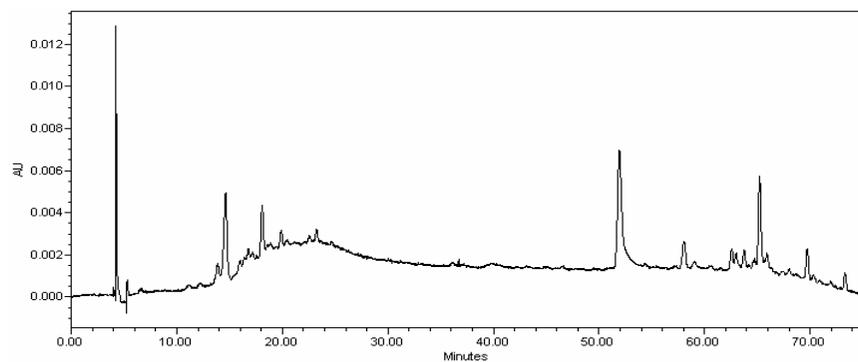
Spectrum of raw betel nut seed 50%ethanol extract



Spectrum of raw betel nut seed water extract



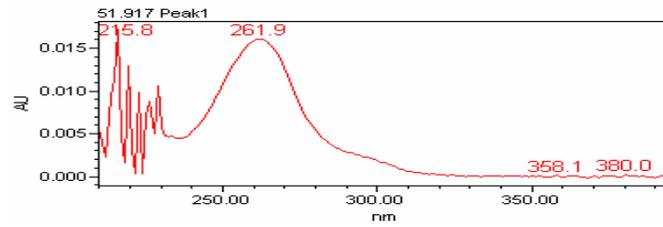
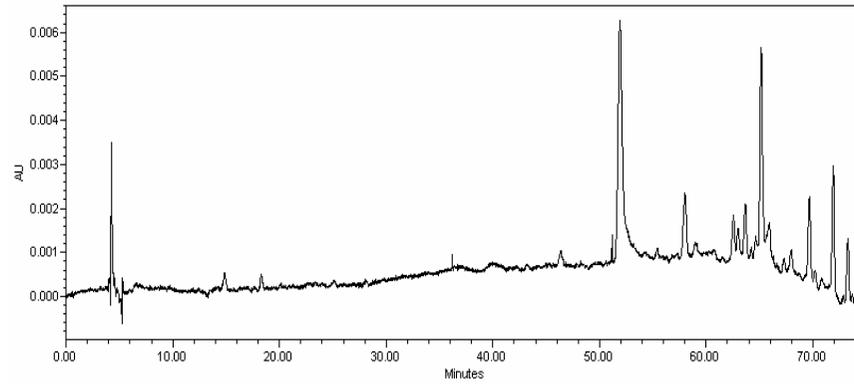
Spectrum of raw betel nut seed propylene glycol extract



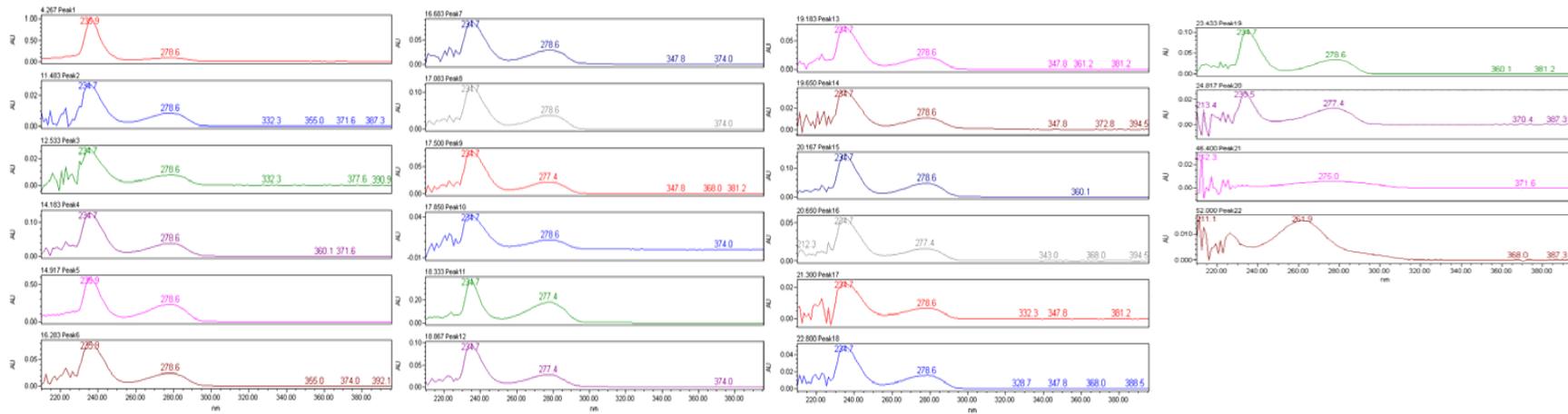
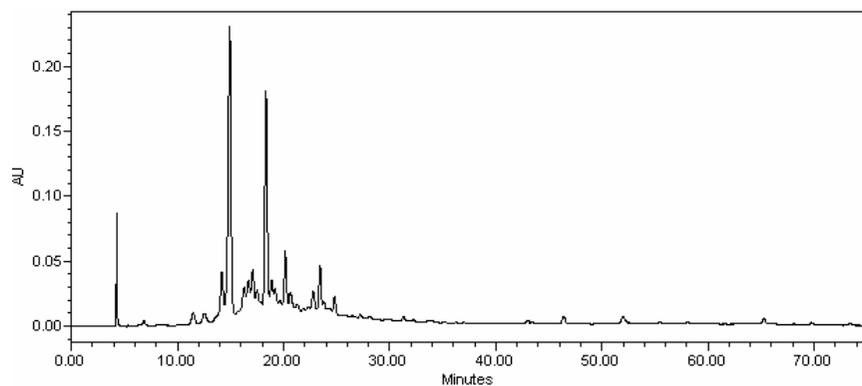
APPENDIX D

Spectrum of betel nut extracts from the solid-liquid fractionated extraction

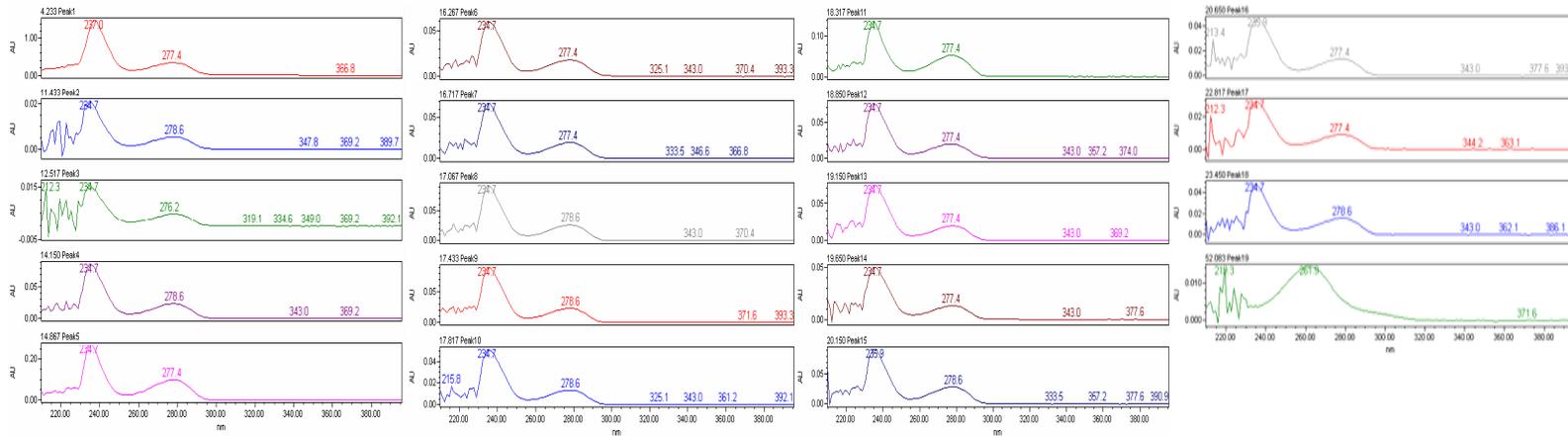
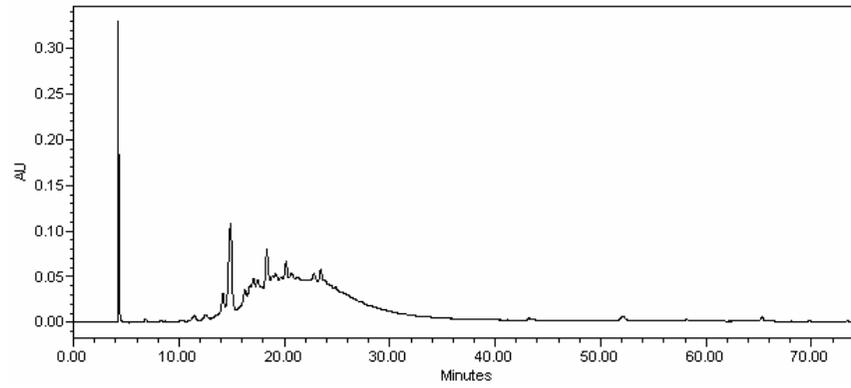
Spectrum of raw betel nut seed hexane fraction



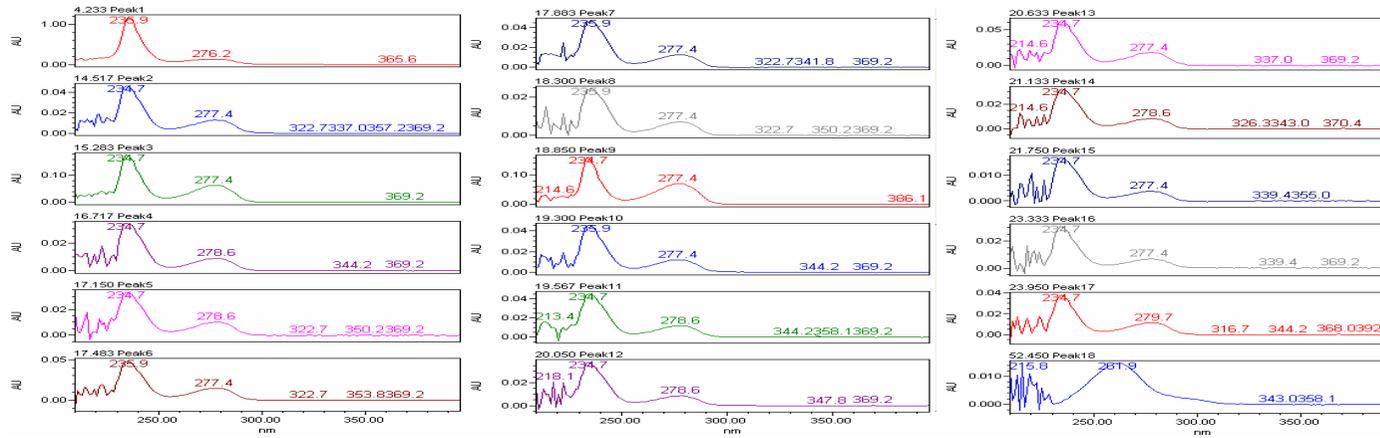
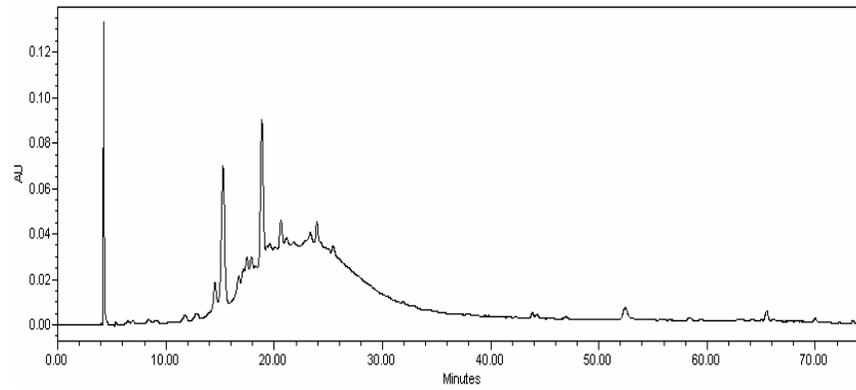
Spectrum of raw betel nut seed ethyl acetate fraction



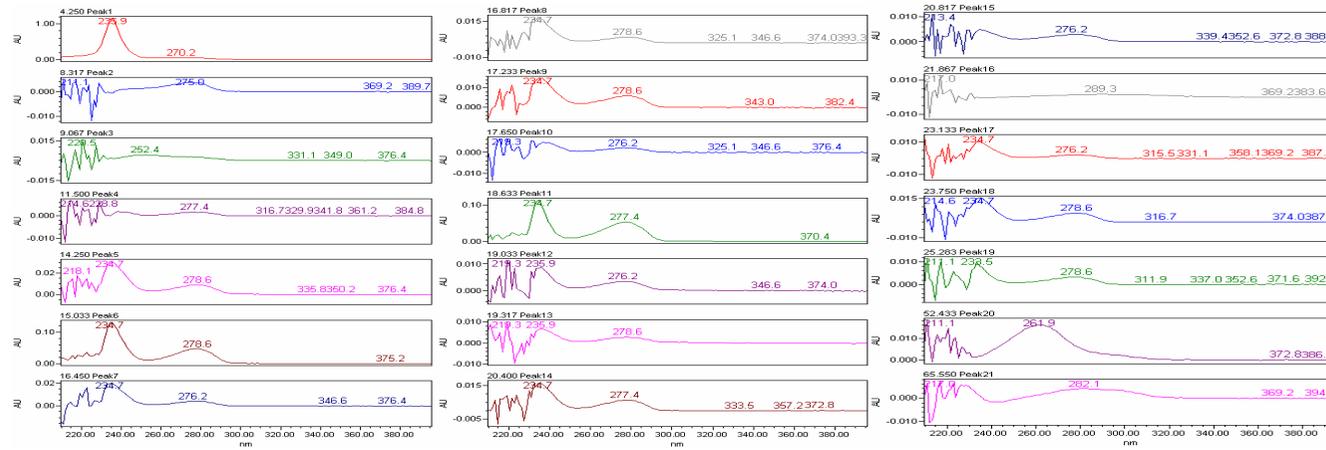
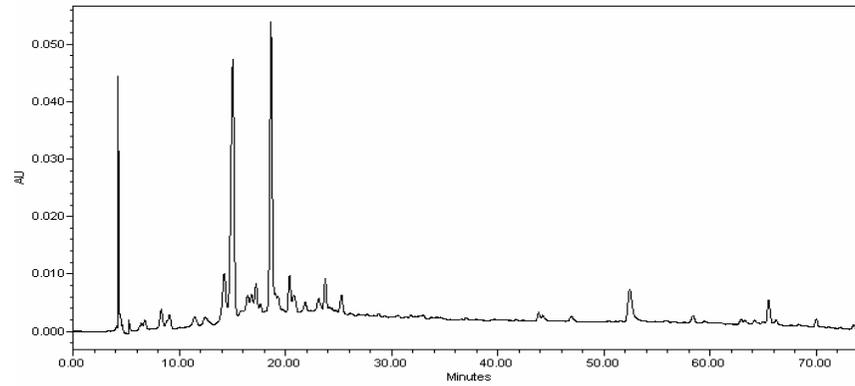
Spectrum of raw betel nut seed acetone fraction



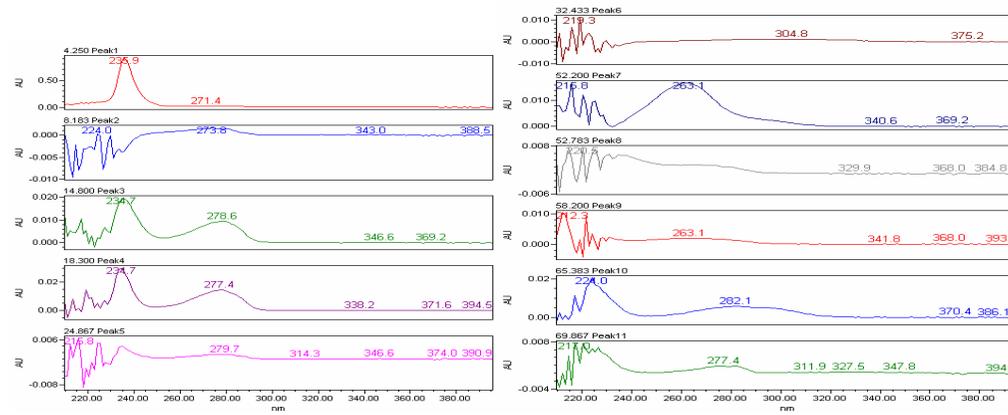
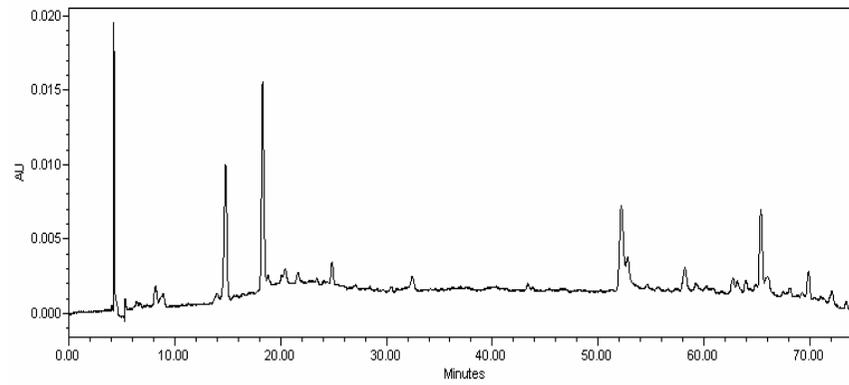
Spectrum of raw betel nut seed 95%ethanol fraction



Spectrum of raw betel nut seed 50%ethanol fraction



Spectrum of raw betel nut seed water fraction



APPENDIX E

Stability of the cosmetic formulation containing raw betel nut seed extract

		Base formula					Formula containing 0.5% (w/w) raw betel nut extract				
		L*	a*	b*	Viscosity (cP)	pH	L*	a*	b*	Viscosity (cP)	pH
<i>Accelerated condition</i>											
Cycle 0	H/C	69.74	-1.82	-0.09	12,800	5.90	68.86	-1.73	-0.25	12,800	5.77
	F/T	68.04	-1.85	0.07	12,800	5.90	67.60	-1.66	-0.08	12,800	5.82
Cycle 3	H/C	56.50	2.33	8.68	12,400	5.77	52.29	3.67	10.74	4,000	4.74
	F/T	56.58	2.03	7.96	13,400	5.82	56.19	2.27	8.18	6,900	4.73
<i>Storage temperature</i>											
Day 0	4 °C	64.93	-1.83	0.07	12,800	5.90	61.41	-1.87	0.59	15,000	5.78
	RT	67.74	-1.81	-0.11	12,800	5.90	67.76	-1.85	0.05	15,000	5.78
	50 °C	64.27	-1.91	0.05	12,800	5.90	62.35	-2.35	1.17	15,000	5.75
Day 28	4 °C	56.83	2.12	8.13	11,172	5.78	52.31	2.24	8.74	12,980	5.54
	RT	54.77	1.99	7.88	11,480	5.78	53.13	3.04	10.43	13,240	5.55
	50 °C	59.23	2.22	8.29	10,660	5.75	43.29	9.28	17.43	6,695	5.04

Note: H/C: and heating/cooling, F/T: freeze/thaw, RT: room temperature