

APPENDICES

Appendix A

Standard calibration curve

1. Preparation of standard for phenolic compound determination

Chemicals

1. Gallic acid powder
2. Sodium bicarbonate solution (7.5% w/v)
3. Folin-Ciocalteu reagent (diluted at 1:10 with deionized water)
4. Water

Folin-Ciocalteu procedure

A standard solution was prepared by dissolving 12.50 mg of gallic acid in 100 ml of absolute ethanol in volumetric flask. Standard solution 0.4 ml was mixed with 1.6 mL of sodium bicarbonate solution (7.5% w/v) and then was added with 1.0 mL of the Folin-Ciocalteu reagent (previously diluted at 1:10 with deionized water). The mixture was shaken for well-mixing and incubated at room temperature for 30 minutes. Various concentrations of the standard solution were provided the final concentrations of 0.24, 0.49, 0.98, 1.95, 3.91, 7.81, 15.63, 31.25, 62.50 and 125.00 $\mu\text{g/ml}$.

Table A1 Standard calibration curve of phenolic compounds (gallic acid equivalents) analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (765 nm)			Average	S.D.
	1	2	3		
0.24	0.001	0.001	0.001	0.001	0.000
0.49	0.004	0.003	0.003	0.003	0.001
0.98	0.009	0.008	0.007	0.008	0.001
1.95	0.011	0.010	0.010	0.010	0.001
3.91	0.031	0.030	0.030	0.030	0.001
7.81	0.057	0.056	0.056	0.056	0.001
15.63	0.132	0.131	0.131	0.131	0.001
31.25	0.254	0.253	0.253	0.253	0.001
62.50	0.492	0.490	0.491	0.491	0.001
125.00	1.015	1.014	1.014	1.014	0.001

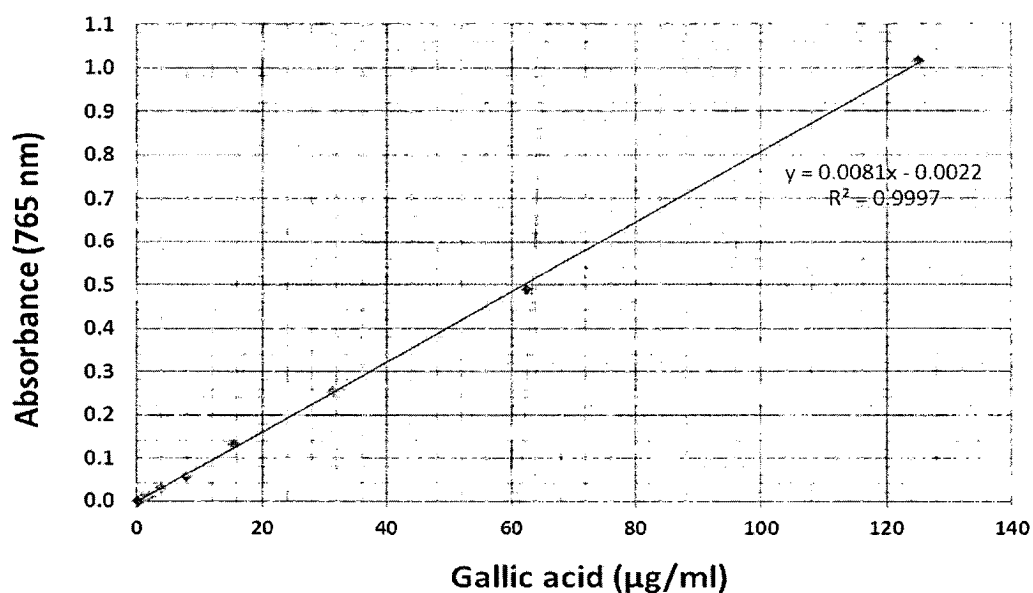


Figure A1 Standard calibration curve of phenolic compound for quantitative determination of bioactive compounds content

Table A2 Standard calibration curve of phenolic compounds (gallic acid equivalents) for release analysis in acetate buffer at pH 5.6 analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (765 nm)			Average	S.D.
	1	2	3		
15.63	0.013	0.012	0.012	0.012	0.001
31.25	0.022	0.025	0.024	0.008	0.002
62.50	0.089	0.088	0.087	0.088	0.001
125.00	0.299	0.298	0.301	0.299	0.002
250.00	0.841	0.845	0.850	0.845	0.005
500.00	1.748	1.751	1.752	1.750	0.002

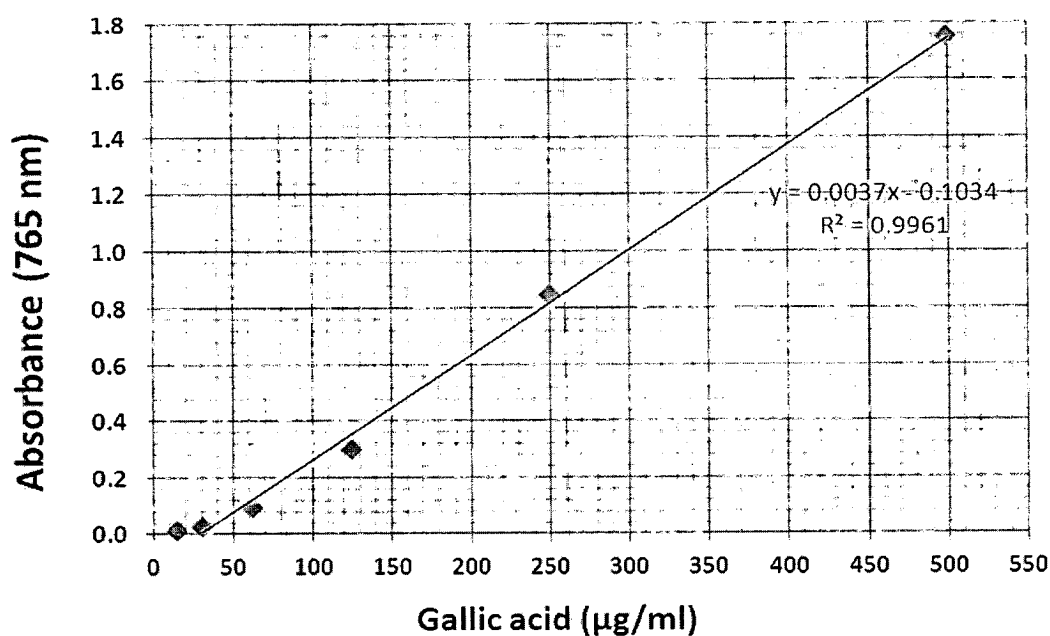


Figure A2 Standard calibration curve of phenolic acid for release analysis in acetate buffer at pH 5.6

Table A3 Standard calibration curve of phenolic compounds (gallic acid equivalents) for release analysis in release analysis in PBS at pH 7.4 analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (765 nm)			Average	S.D.
	1	2	3		
31.25	0.012	0.013	0.012	0.008	0.002
62.50	0.055	0.055	0.056	0.088	0.001
125.00	0.262	0.265	0.269	0.299	0.002
250.00	0.856	0.826	0.810	0.845	0.005
500.00	1.715	1.725	1.709	1.750	0.002

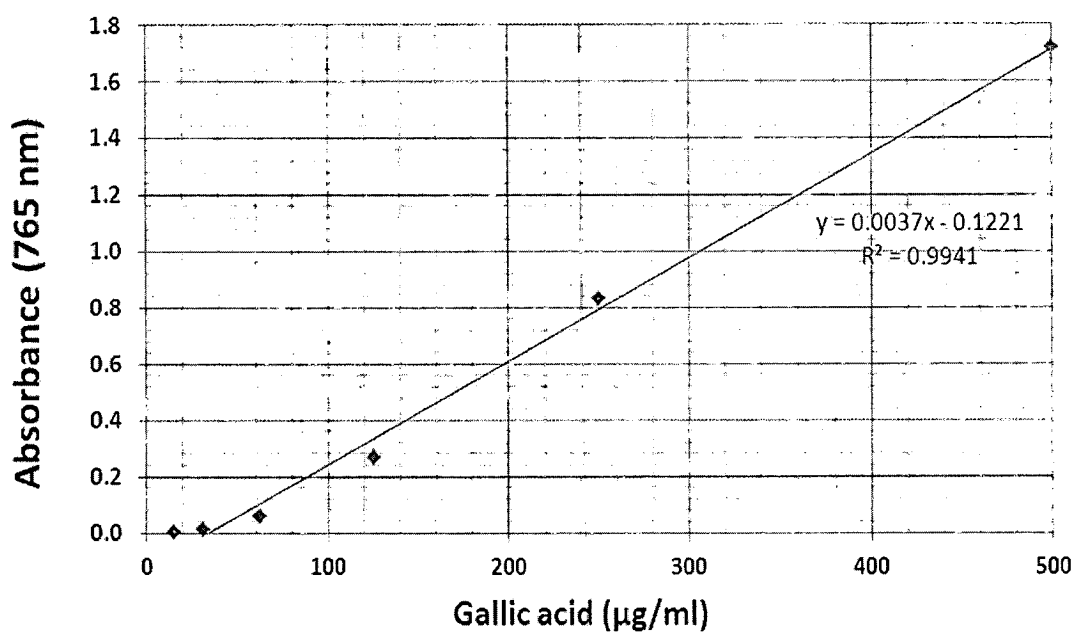


Figure A3 Standard calibration curve of phenolic acid for release analysis in PBS at pH 7.4

A.2 Preparation of standard for mangostins content determination

Chemicals

1. α -mangostin powder
2. Absolute ethanol

Determination of α -mangostin

A stock solution of α -mangostin reference standard was prepared by dissolving 1.88 mg of α -mangostin in 100 ml of ethanol in a volumetric flask. Standard solution 1 ml was mixed with 1 mL of absolute ethanol. The mixture was shaken for well-mixing and incubated at room temperature for 30 minutes. Afterwards, various concentrations of the standard solution were prepared to provide final concentrations at 14.69, 29.38, 58.75, 117.50, 235.00, 470.00, 940.00 and 1880.00 $\mu\text{g/ml}$.

Table A4 Standard calibration curve of mangostins data (alpha-mangostin equivalents) analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (320 nm)			Average	S.D.
	1	2	3		
14.69	0.000	0.000	0.000	0.000	0.000
29.38	0.014	0.012	0.012	0.012	0.013
58.75	0.041	0.042	0.041	0.041	0.001
117.50	0.105	0.103	0.106	0.105	0.002
235.00	0.226	0.225	0.225	0.225	0.001
470.00	0.465	0.468	0.466	0.466	0.002
940.00	0.945	0.924	0.925	0.931	0.012
1880.00	1.871	1.868	1.870	1.870	0.002

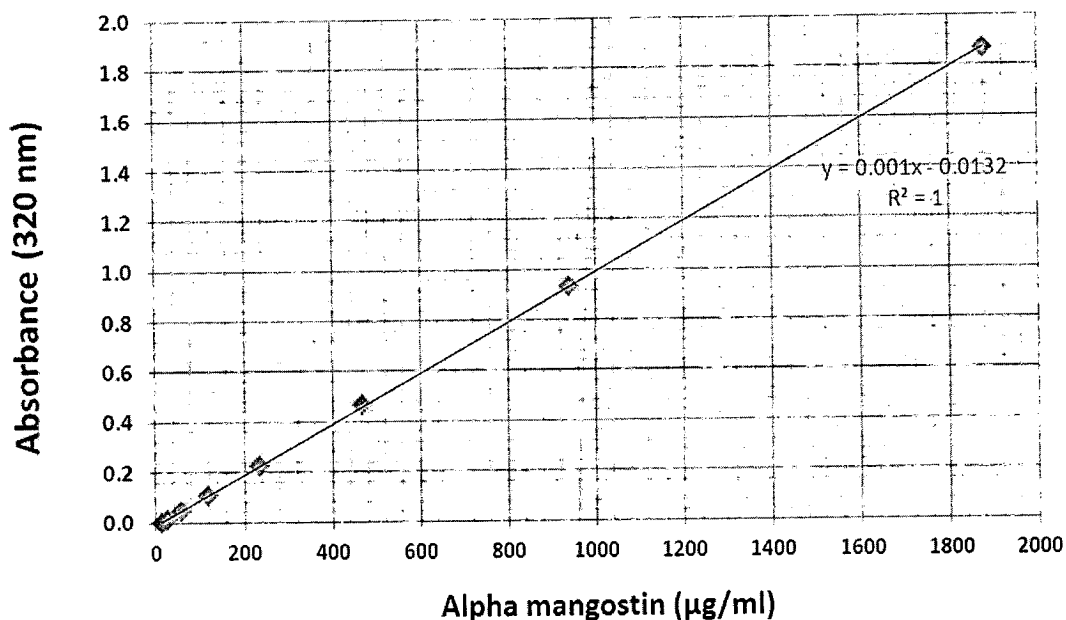


Figure A4 Standard calibration curve of mangostins for quantitative determination of bioactive compounds content

TableA5 Standard calibration curve of mangostins data (alpha-mangostin equivalents) for release analysis in acetate buffer at pH 5.6 analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (765 nm)			Average	S.D.
	1	2	3		
11.72	0.002	0.003	0.002	0.002	0.001
23.44	0.047	0.047	0.053	0.049	0.003
46.88	0.149	0.145	0.151	0.148	0.003
93.75	0.330	0.330	0.330	0.330	0.000
187.50	0.659	0.652	0.672	0.661	0.010
375.00	1.249	1.224	1.269	1.247	0.023
750.00	2.354	2.323	2.372	2.350	0.025

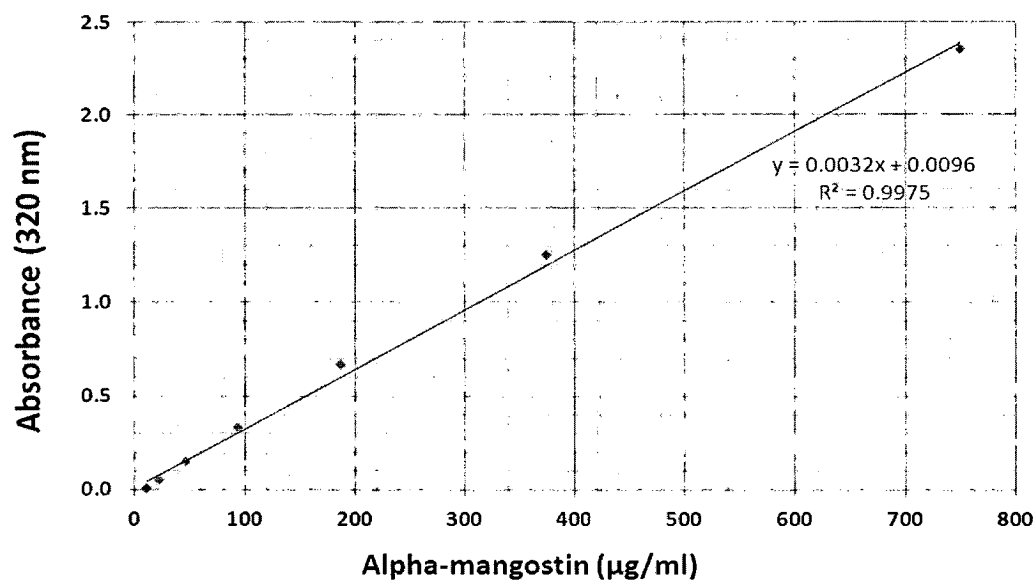


Figure A5 Standard calibration curve of mangostins for release analysis in acetate buffer at pH 5.6

TableA6 Standard calibration curve of mangostins data (alpha-mangostin equivalents) for release analysis in release analysis in PBS at pH 7.4 analyzed by UV-Vis spectrophotometer

Concentration (mg/mL)	Absorbance (765 nm)			Average	S.D.
	1	2	3		
1.47	0.001	0.001	0.001	0.001	0.000
2.93	0.008	0.012	0.010	0.010	0.002
5.86	0.016	0.017	0.017	0.017	0.001
11.72	0.038	0.038	0.038	0.038	0.000
23.44	0.078	0.079	0.078	0.078	0.001
46.88	0.155	0.156	0.157	0.156	0.001
93.75	0.303	0.304	0.303	0.303	0.001
187.50	0.597	0.594	0.596	0.596	0.002
375.00	1.134	1.132	1.131	1.132	0.002
750.00	2.154	2.145	2.208	2.169	0.034

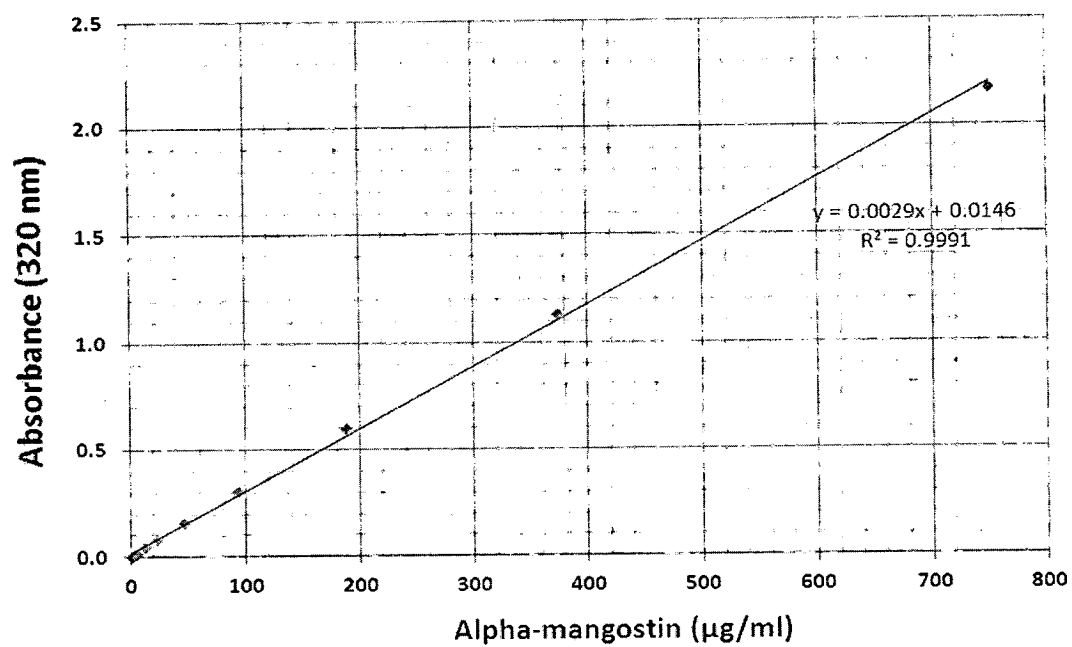


Figure A6 Standard calibration curve of mangostins for release analysis in PBS at pH 7.4

Appendix B

Data of Experiments

Table B1 Data of Table 4.1

Mangosteen Ethanollic Extract (ME)	Bioactive compounds	Amount of bioactive compounds (mg) in mangosteen ethanollic (per 1 mL) extracts				
		1	2	3	Average	S.D.
Conc. ME	Phenolic compound	0.46	0.42	0.45	0.44	0.02
	Mangostins	392.81	349.80	357.48	366.69	0.04
1% v/v of ME	Phenolic compound	-	-	-	-	-
	Mangostins	5.93	5.89	5.97	5.93	0.04
5% v/v of ME	Phenolic compound	-	-	-	-	-
	Mangostins	11.75	11.70	11.73	11.72	0.03
10% v/v of ME	Phenolic compound	-	-	-	-	-
	Mangostins	22.80	22.87	22.75	22.80	0.06

Table B2 Data of Figure 4.5

Sample	Water absorption capacity (%)				
	1	2	3	Average	S.D.
BC	265.00	257.14	240.91	254.35	12.29
Alginate	300.00	295.24	295.24	296.83	2.75
BC/A	227.27	208.70	190.00	208.66	18.64
60/10/30	408.77	408.93	417.86	411.85	5.20
60/20/20	325.53	356.52	341.86	341.30	15.50
60/30/10	216.67	245.45	228.33	230.15	14.48

Table B3 Data of Figure 4.6

Part	Sample	Water absorption capacity (%)				
		1	2	3	Average	S.D.
Glycerol (Gly)	G10:Gly0	325.53	356.52	341.86	341.30	15.50
	G10:Gly1	417.86	426.79	417.86	420.83	5.15
	G10:Gly2	466.47	466.47	453.33	462.22	7.70
	G10:Gly3	438.46	437.97	438.46	438.30	0.28
Sorbitol (S)	G10:S0	325.53	356.52	341.86	341.30	15.50
	G10:S1	504.17	504.17	502.04	503.46	1.23
	G10:S2	661.36	644.19	650.00	651.85	8.74
	G10:S3	576.92	566.67	566.67	570.09	5.92
The mixture of Gly and S	G10:GS0	325.53	356.52	341.86	341.30	15.50
	G10:GS1	448.39	464.52	456.45	456.45	8.06
	G10:GS2	591.18	600.00	566.67	585.95	17.27
	G10:GS3	517.28	526.67	500.00	514.65	13.53

Table B4 Data of Figure 4.7

Sample	Tensile strength (MPa)						
	1	2	3	4	5	Average	S.D.
100/0/0 (BC)	54.6	60.6	61.2	57.2	54.1	57.5	3.3
60/40/0 (BC/A)	151.5	146.9	152.8	144.6	143.9	147.9	3.6
60/10/30	169.3	164.7	170.6	165.3	162.8	166.5	3.3
60/20/20	182.0	186.5	181.3	178.2	181.1	181.8	3.0
60/30/10	181.7	174.8	175.9	180.1	174.9	177.5	3.7
Sample	Elongation at break (%)						
	1	2	3	4	5	Average	S.D.
100/0/0 (BC)	1.16	0.94	0.85	1.06	0.98	1.00	0.12
60/40/0 (BC/A)	2.11	2.14	2.10	2.01	2.00	2.07	0.06
60/10/30	2.06	1.91	2.01	1.86	2.11	1.99	0.10
60/20/20	2.71	2.84	3.06	3.01	2.94	2.91	0.14
60/30/10	1.88	2.05	1.89	2.19	1.97	2.00	0.13

Table B5 Data of Figure 4.8

Sample		Tensile strength (MPa)						
		1	2	3	4	5	Average	S.D.
60/10/30	No plasticizer	169.3	164.7	170.6	165.3	162.8	166.5	3.3
	Glycerol	154.8	158.4	157.8	154.6	150.7	155.3	3.1
	Sorbitol	168.7	172.3	170.8	166.3	169.7	169.6	2.3
	Mixture of GS	156.6	159.3	159.6	152.6	155.9	156.8	3.2
60/20/20	No plasticizer	182.0	186.5	181.3	178.2	181.1	181.8	3.0
	Glycerol	178.2	181.4	183.7	185.8	182.1	182.2	2.8
	Sorbitol	162.7	168.6	165.1	164.1	163.2	164.7	2.3
	Mixture of GS	179.9	183.7	177.1	178.2	179.4	179.7	2.5
60/30/10	No plasticizer	181.7	174.8	175.9	180.1	174.9	177.5	3.7
	Glycerol	177.7	181.1	180.5	175.8	177.7	187.6	2.2
	Sorbitol	175.9	173.9	182.2	178.1	177.2	177.5	3.1
	Mixture of GS	182.8	180.8	175.7	176.4	178.2	178.8	3.0
Sample		Elongation at break (%)						
		1	2	3	4	5	Average	S.D.
60/10/30	No plasticizer	2.06	1.91	2.01	1.86	2.11	1.99	0.10
	Glycerol	1.77	1.64	1.63	1.65	1.75	1.69	0.07
	Sorbitol	1.89	2.07	2.20	1.97	2.10	2.05	0.12
	Mixture of GS	1.76	1.91	1.93	1.89	1.79	1.86	0.08
60/20/20	No plasticizer	2.71	2.84	3.06	3.01	2.94	2.91	0.14
	Glycerol	2.41	2.33	2.53	2.57	2.32	2.43	0.11
	Sorbitol	1.59	1.64	1.67	1.60	1.73	1.65	0.06
	Mixture of GS	1.86	2.07	1.99	1.79	1.89	1.92	0.11
60/30/10	No plasticizer	1.88	2.05	1.89	2.19	1.97	2.00	0.13
	Glycerol	1.96	2.07	1.99	2.14	2.08	2.05	0.08
	Sorbitol	2.29	2.14	2.20	2.26	2.36	2.25	0.08
	Mixture of GS	1.82	1.99	1.81	1.84	1.88	1.87	0.07

Table B6 Data of Figure 4.9

Sample	Tensile strength (MPa)						
	1	2	3	4	5	Average	S.D.
100/0/0 (BC)	2.22	2.37	1.98	2.26	2.18	2.20	0.14
60/40/0 (BC/A)	16.20	14.21	15.60	15.04	15.46	15.30	0.74
60/10/30	2.44	2.36	2.28	2.11	2.30	2.30	0.12
60/20/20	9.38	9.57	10.06	9.51	9.42	9.59	0.27
60/30/10	11.68	11.25	10.86	11.55	11.42	11.35	0.32
Sample	Elongation at break (%)						
	1	2	3	4	5	Average	S.D.
100/0/0 (BC)	1.54	2.23	2.14	1.81	1.75	1.89	0.29
60/40/0 (BC/A)	18.00	18.15	17.72	18.12	17.89	17.98	0.18
60/10/30	14.18	15.26	14.86	15.12	14.55	14.79	0.44
60/20/20	29.97	31.21	29.89	30.29	30.10	30.29	0.53
60/30/10	11.71	11.11	10.86	11.55	11.42	27.97	0.24

Table B7 Data of Figure 4.10

Sample		Tensile strength (MPa)						
		1	2	3	4	5	Average	S.D.
60/10/30	No plasticizer	2.44	2.36	2.28	2.11	2.30	2.30	0.12
	Glycerol	0.73	0.78	0.87	1.12	0.92	0.88	0.15
	Sorbitol	0.47	0.42	0.34	0.37	0.41	0.40	0.05
	Mixture of GS	0.38	0.42	0.36	0.45	0.41	0.40	0.03
60/20/20	No plasticizer	9.38	9.57	10.06	9.51	9.42	9.59	0.27
	Glycerol	4.39	3.76	3.75	4.35	3.95	4.04	0.31
	Sorbitol	1.58	1.53	2.05	1.95	1.67	1.75	0.23
	Mixture of GS	1.84	2.16	2.05	1.93	2.04	2.00	0.12
60/30/10	No plasticizer	11.68	11.25	10.86	11.55	11.42	11.35	0.32
	Glycerol	7.91	8.35	7.98	8.19	8.12	8.11	0.17
	Sorbitol	5.83	5.81	6.03	6.08	5.89	5.93	0.12
	Mixture of GS	7.30	6.75	6.86	7.24	6.92	7.01	0.24

Sample		Elongation at break (%)						
		1	2	3	4	5	Average	S.D.
60/10/30	No plasticizer	14.18	15.26	14.86	15.12	14.55	14.79	0.44
	Glycerol	21.91	23.57	22.67	23.29	22.85	22.86	0.64
	Sorbitol	8.15	7.71	7.73	6.57	7.81	7.59	0.60
	Mixture of GS	15.51	14.90	14.32	15.58	14.87	15.04	0.52
60/20/20	No plasticizer	29.97	31.21	29.89	30.29	30.10	30.29	0.53
	Glycerol	43.71	44.84	45.12	44.54	45.01	44.64	0.57
	Sorbitol	30.36	29.70	29.86	29.94	29.68	29.91	0.27
	Mixture of GS	32.27	31.43	31.27	31.14	31.56	31.53	0.44
60/30/10	No plasticizer	11.71	11.11	10.86	11.55	11.42	27.97	0.24
	Glycerol	46.74	45.43	44.99	45.56	45.74	45.69	0.65
	Sorbitol	38.01	37.19	37.94	38.29	37.76	37.84	0.41
	Mixture of GS	42.29	42.60	41.54	42.59	41.87	42.18	0.46

Table B8 Data of Figure 4.16

Sample	Water absorption capacity (%)				
	1	2	3	Average	S.D.
BAG	325.53	356.52	341.86	341.30	15.50
MBAG	466.47	466.47	453.33	462.22	7.70
MBAG-5T	482.50	445.45	446.77	458.24	21.02
MBAG-10T	375.41	386.21	408.06	389.89	16.64
MBAG-15T	356.45	322.58	357.89	345.64	19.99

Table B9 Data of Figure 4.17

Sample	Tensile strength (MPa)						
	1	2	3	4	5	Average	S.D.
BC	54.6	60.6	61.2	57.2	54.1	57.5	3.3
BAG	182.0	186.5	181.3	178.2	181.1	181.8	3.0

MBAG	178.2	181.4	183.7	185.8	182.1	182.2	2.8	
MBAG-5T	168.2	180.0	174.5	178.6	172.6	174.8	4.7	
MBAG-10T	182.1	174.5	171.2	181.4	178.4	177.5	4.6	
MBAG-15T	187.3	176.8	179.8	188.6	184.2	181.3	4.3	
Sample	Elongation at break (%)						Average	S.D.
	1	2	3	4	5			
BC	1.16	0.94	0.85	1.06	0.98	1.00	0.12	
BAG	2.71	2.84	3.06	3.01	2.94	2.91	0.14	
MBAG	2.41	2.33	2.53	2.57	2.32	2.43	0.11	
MBAG-5T	1.79	1.71	2.01	1.86	1.81	1.84	0.11	
MBAG-10T	2.68	2.36	2.74	2.66	2.52	2.59	0.15	
MBAG-15T	1.95	2.36	2.00	2.04	2.34	2.14	0.20	

Table B10 Data of Figure 4.18

Sample	Tensile strength (MPa)							
	1	2	3	4	5	Average	S.D.	
BC	2.22	2.37	1.98	2.26	2.18	2.20	0.14	
BAG	9.38	9.57	10.06	9.51	9.42	9.59	0.27	
MBAG	4.39	3.76	3.75	4.35	3.95	4.04	0.31	
MBAG-5T	2.95	2.57	3.06	2.64	2.75	2.79	0.21	
MBAG-10T	2.51	2.46	2.36	2.72	2.63	2.55	0.25	
MBAG-15T	3.00	2.36	2.58	3.04	2.57	2.71	0.30	
Sample	Elongation at break (%)						Average	S.D.
	1	2	3	4	5			
BC	1.54	2.23	2.14	1.81	1.75	1.89	0.29	
BAG	29.97	31.21	29.89	30.29	30.10	30.29	0.53	
MBAG	43.71	44.84	45.12	44.54	45.01	44.64	0.57	
MBAG-5T	52.24	55.16	48.80	48.60	49.80	50.92	2.78	
MBAG-10T	48.40	53.80	50.60	51.80	46.60	50.24	2.82	
MBAG-15T	55.80	51.04	49.80	50.80	48.80	51.25	2.70	

Table B11 Data of Figure 4.23

Sample	Transparency						
	1	2	3	4	5	Average	S.D.
BAG	1.24	1.25	1.25	1.26	1.26	1.25	0.01
MBAG	1.12	1.12	1.12	1.12	1.12	1.12	0.00
MBAG-10T	0.86	0.87	0.86	0.86	0.86	0.86	0.01
MBAGTM1%	0.68	0.68	0.71	0.71	0.69	0.69	0.02
MBAGTM5%	0.64	0.65	0.67	0.68	0.67	0.66	0.02
MBAGTM10%	0.82	0.79	0.80	0.79	0.83	0.80	0.02

Table B12 Data of Figure 4.26

Sample	Water absorption capacity (%)				
	1	2	3	Average	S.D.
BAG	325.53	356.52	341.86	341.30	15.50
MBAG	466.47	466.47	453.33	462.22	7.70
MBAG-10T	375.41	386.21	408.06	389.89	16.64
MBAGTM1%	306.45	337.78	321.43	321.89	15.67
MBAGTM5%	294.25	262.82	289.41	282.16	16.92
MBAGTM10%	263.24	268.75	276.92	269.64	6.89

Table B13 Data of Figure 4.27

Sample	Tensile strength (MPa)						
	1	2	3	4	5	Average	S.D.
BC	54.6	60.6	61.2	57.2	54.1	57.5	3.3
BAG	182.0	186.5	181.3	178.2	181.1	181.8	3.0
MBAG	178.2	181.4	183.7	185.8	182.1	182.2	2.8
MBAGT	182.1	174.5	171.2	181.4	178.4	177.5	4.6
MBAGTM1%	183.9	172.4	192.8	196.1	199.1	188.9	10.8
MBAGTM5%	163.2	154.7	168.0	155.3	157.4	159.7	5.7
MBAGTM10%	127.2	137.1	141.1	126.7	121.9	130.8	8.0

Sample	Elongation at break (%)					Average	S.D.
	1	2	3	4	5		
BC	1.16	0.94	0.85	1.06	0.98	1.00	0.12
BAG	2.71	2.84	3.06	3.01	2.94	2.91	0.14
MBAG	2.41	2.33	2.53	2.57	2.32	2.43	0.11
MBAGT	2.68	2.36	2.74	2.66	2.52	2.59	0.15
MBAGTM1%	3.20	2.81	2.02	2.98	3.20	3.04	0.16
MBAGTM5%	4.00	3.98	4.46	4.32	4.32	4.22	0.21
MBAGTM10%	3.54	4.08	4.02	3.89	3.72	3.85	0.22

Table B14 Data of Figure 4.28

Sample	Tensile strength (MPa)						
	1	2	3	4	5	Average	S.D.
BC	2.22	2.37	1.98	2.26	2.18	2.20	0.14
BAG	9.38	9.57	10.06	9.51	9.42	9.59	0.27
MBAG	4.39	3.76	3.75	4.35	3.95	4.04	0.31
MBAGT	2.51	2.46	2.36	2.72	2.63	2.55	0.25
MBAGTM1%	2.39	2.86	2.79	2.36	2.24	2.53	0.28
MBAGTM5%	1.60	1.61	1.96	1.88	2.01	1.82	0.18
MBAGTM10%	1.81	2.30	2.10	2.00	1.79	2.00	0.21
Sample	Elongation at break (%)					Average	S.D.
	1	2	3	4	5		
BC	1.54	2.23	2.14	1.81	1.75	1.89	0.29
BAG	29.97	31.21	29.89	30.29	30.10	30.29	0.53
MBAG	43.71	44.84	45.12	44.54	45.01	44.64	0.57
MBAGT	48.40	53.80	50.60	51.80	46.60	50.24	2.82
MBAGTM1%	60.80	63.60	63.60	61.40	65.80	63.04	2.00
MBAGTM5%	46.00	44.50	46.70	48.20	48.20	46.72	1.57
MBAGTM10%	48.20	50.00	46.20	46.40	45.20	47.20	1.90

Table B15 Data of Table 4.4

Sample	OTR (cc/m ² .day)			
	1	2	Average	S.D.
BAG	0.869	0.906	0.887	0.026
MBAG	1.050	1.110	1.080	0.042
MBAG-10T	0.794	0.734	0.764	0.042
MBAGTM10%	1.10	1.10	1.100	0.000

Table B16 Data of Table 4.5

Sample	WVTR (g/m ² .day)			
	1	2	Average	S.D.
BAG	770.00	768.00	769.00	1.41
MBAG	792.00	794.00	793.00	0.042
MBAG-10T	985.92	966.72	976.32	13.58
MBAGTM10%	1416.48	1387.68	1402.08	20.36

Table B17 Data of Table 4.6

<i>Staphylococcus aureus</i>	Tube	Final concentration	1% V/V ME		3% TA	
			MIC	MBC	MIC	MBC
	1	1:1	-	-	-	-
	2	1:2	-	-	+	+
	3	1:4	-	-	+	+
	4	1:8	+	+	+	+
	5	1:16	+	+	+	+
	6	1:32	+	+	+	+
	7	1:64	+	+	+	+
	8	1:128	+	+	+	+
9	1:256	+	+	+	+	
10	1:512	+	+	+	+	
11	Inoculum	+	+	+	+	

<i>Escherichia coli</i>	Tube	Final concentration	1% V/V ME		3% TA	
			MIC	MBC	MIC	MBC
	1	1:1	-	-	-	-
	2	1:2	-	-	+	+
	3	1:4	-	-	+	+
	4	1:8	+	+	+	+
	5	1:16	+	+	+	+
	6	1:32	+	+	+	+
	7	1:64	+	+	+	+
	8	1:128	+	+	+	+
	9	1:256	+	+	+	+
	10	1:512	+	+	+	+
	11	Inoculum	+	+	+	+

<i>Listeria monocytogenes</i>	Tube	Final concentration	1% V/V ME		3% TA	
			MIC	MBC	MIC	MBC
	1	1:1	-	-	-	-
	2	1:2	-	-	-	-
	3	1:4	-	-	+	+
	4	1:8	-	+	+	+
	5	1:16	+	+	+	+
	6	1:32	+	+	+	+
	7	1:64	+	+	+	+
	8	1:128	+	+	+	+
	9	1:256	+	+	+	+
	10	1:512	+	+	+	+
	11	Inoculum	+	+	+	+

	Tube	Final concentration	1% V/V ME		3% TA	
			MIC	MBC	MIC	MBC
<i>Salmonella typhimurium</i>	1	1:1	-	-	-	-
	2	1:2	-	-	+	+
	3	1:4	-	-	+	+
	4	1:8	-	+	+	+
	5	1:16	+	+	+	+
	6	1:32	+	+	+	+
	7	1:64	+	+	+	+
	8	1:128	+	+	+	+
	9	1:256	+	+	+	+
	10	1:512	+	+	+	+
	11	Inoculum	+	+	+	+

Table B18 Data of Table 4.7

Microorganisms	Mangosteen ethanolic extract supplementation (%v/v)	Clear zone (mm)				
		1	2	3	Average	S.D.
<i>E. coli</i>	MBAGTM-1%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-5%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-10%	0.00	0.00	0.00	0.00	0.00
<i>S. typhimurium</i>	MBAGTM-1%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-5%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-10%	0.00	0.00	0.00	0.00	0.00
<i>S. Aureus</i>	MBAGTM-1%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-5%	0.00	0.00	0.00	0.00	0.00
	MBAGTM-10%	0.00	0.00	0.00	0.00	0.00

Table B19 Data of Table 4.9

Films	Bioactive compounds	Actual amount in modified BC film (mg/cm ³)				
		1	2	3	Average	S.D.
First time						
MBAGTM1%	Phenolic compounds (GAE)	0.431	0.450	0.470	0.450	0.019
MBAGTM5%		50.134	49.710	49.427	49.757	0.356
MBAGTM10%		82.507	83.407	82.249	82.721	0.608
MBAGTM1%	Mangostins (AME)	10.569	10.411	10.569	10.561	0.091
MBAGTM5%		114.678	115.244	114.253	114.725	0.497
MBAGTM10%		198.211	198.469	198.983	198.555	0.393
Second time						
MBAGTM1%	Phenolic compounds (GAE)	0.606	0.625	0.606	0.612	0.011
MBAGTM5%		12.909	12.626	12.626	12.720	0.163
MBAGTM10%		19.456	19.198	19.327	19.327	0.129
MBAGTM1%	Mangostins (AME)	7.738	7.895	7.266	7.633	0.327
MBAGTM5%		12.626	12.343	12.626	12.531	0.163
MBAGTM10%		39.169	38.654	38.911	38.911	0.257
Summary of Actual content						
MBAGTM1%	Phenolic compounds (GAE)	1.056	1.056	1.082	1.065	0.015
MBAGTM5%		62.760	62.335	62.147	62.414	0.314
MBAGTM10%		101.705	102.734	101.576	102.005	0.635
MBAGTM1%	Mangostins (AME)	18.306	18.306	17.834	18.149	0.272
MBAGTM5%		127.304	127.587	127.879	127.256	0.356
MBAGTM10%		237.380	237.123	237.895	237.466	0.393

Table B20 Data of Figure 4.35

		Cumulative release of phenolic compounds (%)					
		Acetate buffer at pH 5.6					
Time (h)	Films	MBAGTM	S.D.	MBAGTM	S.D.	MBAGTM	S.D.
		1%		5%		10%	
Time (h)	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	6.0	3.672	0.000	0.064	0.000	0.040	0.000
	12.0	3.884	0.000	0.067	0.000	0.041	0.000
	18.0	3.998	0.000	0.069	0.000	0.043	0.000
	24.0	4.118	0.000	0.071	0.000	0.043	0.000
	30.0	4.238	0.000	0.074	0.000	0.045	0.000
	36.0	4.382	0.000	0.077	0.000	0.046	0.000
	48.0	4.630	0.000	0.084	0.000	0.049	0.000
	60.0	4.801	0.000	0.087	0.000	0.052	0.000
	72.0	4.983	0.000	0.092	0.000	0.055	0.000
		PBS at pH 7.4					
Time (h)	Films	MBAGTM1	S.D.	MBAGTM5	S.D.	MBAGTM	S.D.
		%		%		10%	
Time (h)	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	6.0	3.605	0.000	0.063	0.000	0.034	0.000
	12.0	3.742	0.000	0.067	0.000	0.035	0.000
	18.0	3.881	0.000	0.069	0.000	0.038	0.000
	24.0	4.003	0.000	0.071	0.000	0.040	0.000
	30.0	4.087	0.000	0.074	0.000	0.041	0.000
	36.0	4.281	0.000	0.078	0.000	0.044	0.000
	48.0	4.590	0.000	0.087	0.000	0.048	0.000
	60.0	4.808	0.000	0.090	0.000	0.048	0.000
	72.0	4.893	0.000	0.092	0.000	0.052	0.000

Table B21 Data of Figure 4.36

		Cumulative release of mangostins (%)					
		Acetate buffer at pH 5.6					
Time (h)	Films	MBAGTM 1%	S.D.	MBAGTM 5%	S.D.	MBAGTM 10%	S.D.
	0.0		0.000	0.000	0.000	0.000	0.000
6.0		0.469	0.000	0.069	0.000	0.037	0.000
12.0		0.480	0.000	0.072	0.000	0.039	0.000
18.0		0.488	0.000	0.078	0.000	0.043	0.000
24.0		0.499	0.000	0.084	0.000	0.046	0.000
30.0		0.507	0.000	0.087	0.000	0.049	0.000
36.0		0.517	0.000	0.091	0.000	0.051	0.000
48.0		0.529	0.000	0.100	0.000	0.054	0.000
60.0		0.532	0.000	0.110	0.000	0.056	0.000
72.0		0.535	0.000	0.123	0.000	0.059	0.000
		PBS at pH 7.4					
Time (h)	Films	MBAGTM 1%	S.D.	MBAGTM 5%	S.D.	MBAGTM 10%	S.D.
	0.0		0.000	0.000	0.000	0.000	0.000
6.0		0.628	0.000	0.106	0.000	0.036	0.000
12.0		0.729	0.000	0.126	0.000	0.041	0.000
18.0		0.829	0.000	0.143	0.000	0.046	0.000
24.0		0.869	0.000	0.159	0.000	0.049	0.000
30.0		0.884	0.000	0.184	0.000	0.054	0.000
36.0		0.929	0.000	0.197	0.000	0.057	0.000
48.0		1.065	0.000	0.209	0.000	0.062	0.000
60.0		1.122	0.000	0.222	0.000	0.067	0.000
72.0		1.254	0.000	0.267	0.000	0.072	0.000