

Supplementary material

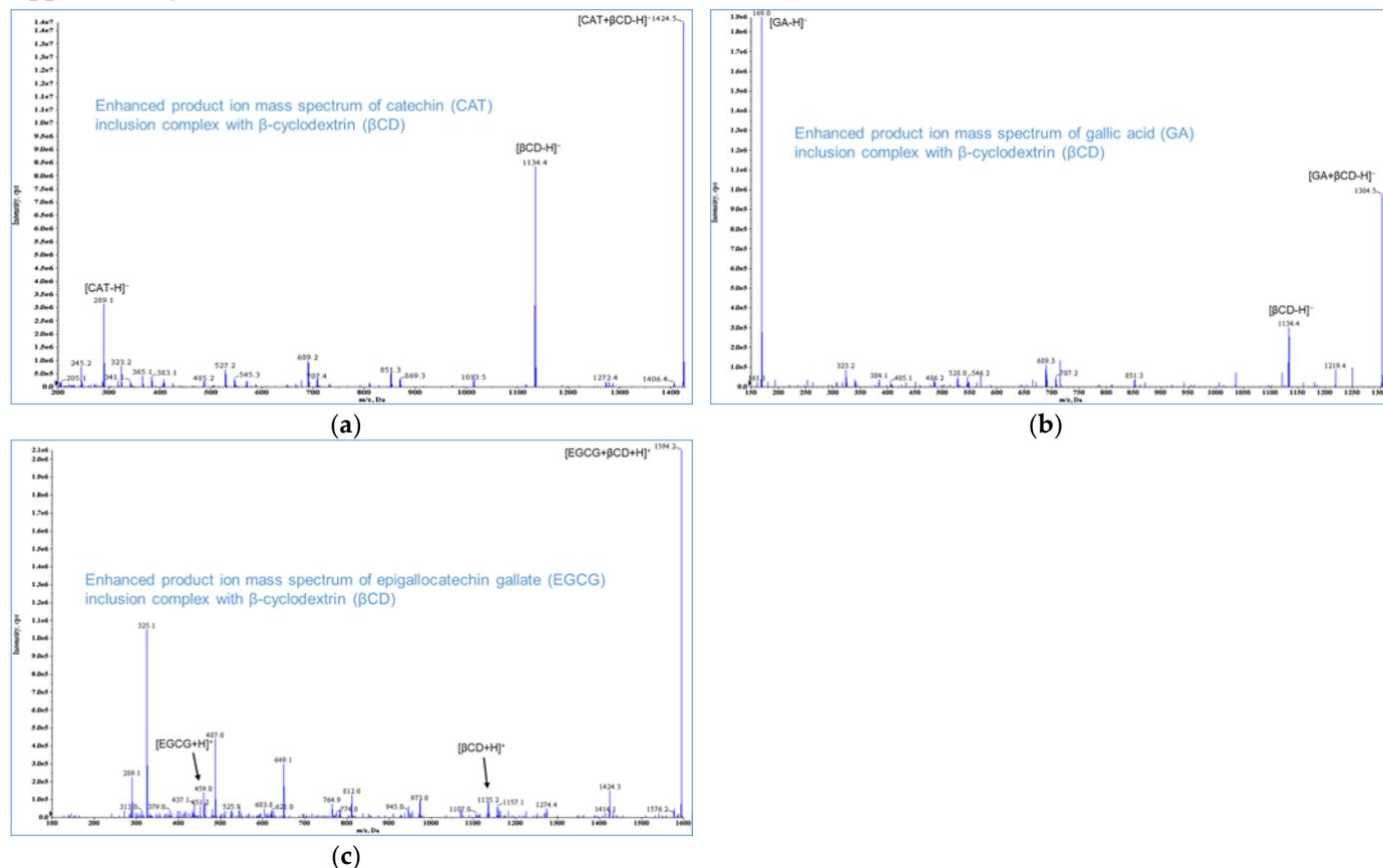


Figure S1. Enhanced product ions scan mass spectrum of β CD inclusion complexes with (a) CAT, (b) GA and (c) EGCG. β CD – beta cyclodextrin, CAT – catechin, GA – gallic acid, EGCG – epigallocatechin gallate.

Table S1. Polyphenol-polyphenol interactions on antioxidant activity (ORAC assay (μ M TE)).

	CAT/GA	CAT/EGCG	GA/EGCG	CAT/GA/EGCG
Non-encapsulated				
Expected	23.53 \pm 1.234	31.97 \pm 2.06	29.41 \pm 1.56	42.46 \pm 2.36
Observed	22.25 \pm 0.36	20.44 \pm 1.03*	23.14 \pm 0.30*	23.35 \pm 1.14*
p value	0.14	< 0.001	< 0.001	< 0.001
Interaction	Additive	Antagonistic	Antagonistic	Antagonistic
Encapsulated				
Expected	24.11 \pm 1.11	33.52 \pm 1.38	30.58 \pm 1.56	30.58 \pm 1.56
Observed	22.56 \pm 0.40	21.87 \pm 0.99*	22.54 \pm 0.39*	24.03 \pm 1.01*
p value	0.07	< 0.001	< 0.001	< 0.001
Interaction	Additive	Antagonistic	Antagonistic	Antagonistic

CAT – catechin, GA – gallic acid, EGCG – epigallocatechin gallate, μ M TE – micromolar Trolox equivalents. The * denotes significant ($p < 0.05$) difference between the expected and observed values in the same column for non-encapsulated and encapsulated samples. The data is represented as mean \pm SEM of at least five experiments done in duplicates.

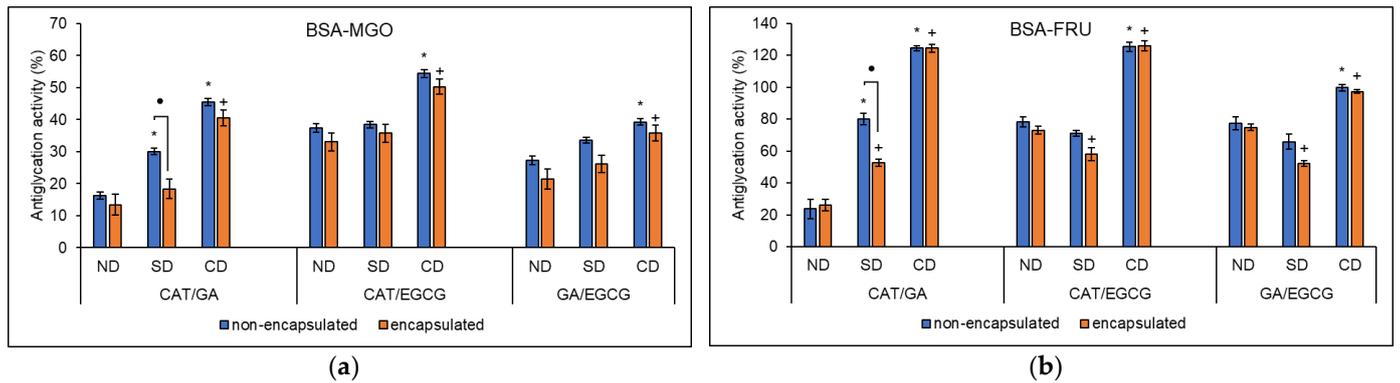


Figure S2. Inhibition of AGEs formation by non-digested (ND), and following simple (SD) and com-plex (CD) digestion of non- and encapsulated CAT/GA, CAT/EGCG, and GA/EGCG combinations evaluated with the (a) BSA-MGO and (b) BSA-FRU models at 100 μ M for each polyphenol in each sample. The data is represented as mean \pm SEM of at least five experiments done in duplicates. ND – non-digested, SD – simple digestion, CD – complex digestion, AGEs – advanced glycation end-products, BSA – bovine serum albumin, MGO – methylglyoxal, FRU – fructose, CAT – catechin, GA – gallic acid, EGCG – epigallocatechin gallate. The * and + represent significant ($p < 0.05$) differences between non- and encapsulated ND compared with respective SD or CD samples. The • denotes significant ($p < 0.05$) difference between the non- and encapsulated for each treatment.

Table S2. Polyphenol-polyphenol interactions on antiglycation activity (AGEs assay (%)).

BSA-MGO	CAT/GA	CAT/EGCG	GA/EGCG	CAT/GA/EGCG
	Non-encapsulated			
Expected	16.64 \pm 2.55	44.85 \pm 2.65	23.59 \pm 2.42	42.54 \pm 3.75
Observed	16.26 \pm 1.21	37.36 \pm 1.28*	27.31 \pm 1.29*	38.02 \pm 1.30*
p value	0.71	< 0.001	0.01	0.04
Interaction	Additive	Antagonistic	Synergistic	Antagonistic
Encapsulated				
Expected	8.28 \pm 7.27	34.20 \pm 7.11	17.47 \pm 7.22	29.98 \pm 10.78
Observed	13.42 \pm 3.34	33.06 \pm 2.85	21.39 \pm 3.18	33.63 \pm 2.75
p value	0.10	0.72	0.21	0.54
Interaction	Additive	Additive	Additive	Additive
BSA-FRU	CAT/GA	CAT/EGCG	GA/EGCG	CAT/GA/EGCG
	Non-encapsulated			
Expected	41.64 \pm 11.12	≥ 100.00	88.17 \pm 9.65	≥ 100.00
Observed	23.77 \pm 6.15*	78.15 \pm 3.09*	77.39 \pm 3.96*	80.84 \pm 4.73*
p value	0.001	< 0.001	0.03	< 0.001
Interaction	Antagonistic	Antagonistic	Antagonistic	Antagonistic
Encapsulated				
Expected	48.34 \pm 5.64	≥ 100.00	89.78 \pm 4.11	≥ 100.00
Observed	26.30 \pm 3.63*	73.05 \pm 2.49*	74.88 \pm 2.16*	75.42 \pm 1.57*
p value	< 0.001	< 0.001	< 0.001	< 0.001
Interaction	Antagonistic	Antagonistic	Antagonistic	Antagonistic

CAT – catechin, GA – gallic acid, EGCG – epigallocatechin gallate, AGEs -advanced glycation end-products, BSA – bovine serum albumin, MGO – methylglyoxal, FRU – fructose. The * denotes significant ($p < 0.05$) difference between the expected and observed values in the same column for non-encapsulated and encapsulated samples. The data is represented as mean \pm SEM of at least five experiments done in duplicates.

Table S3. Polyphenol-polyphenol interactions on cellular activity (DCFH-DA assay antioxidant (%)).

[10 μ M]	CAT/GA ⁺	CAT/EGCG	GA/EGCG	CAT/GA ⁺ /EGCG
Non-encapsulated				
Expected	30.68 \pm 11.13	58.63 \pm 16.53	27.94 \pm 8.25	58.63 \pm 16.53
Observed	36.73 \pm 8.22	69.51 \pm 4.44	73.03 \pm 2.81*	75.60 \pm 3.69
p value	0.39	0.26	< 0.001	0.09
Interaction	Additive	Additive	Synergistic	Additive
Encapsulated				
Expected	21.15 \pm 11.78	44.46 \pm 21.31	23.30 \pm 12.13	44.46 \pm 21.31
Observed	43.15 \pm 7.45*	68.73 \pm 5.45	67.97 \pm 6.22*	80.20 \pm 3.30*
p value	0.001	0.07	< 0.001	0.02
Interaction	Synergistic	Additive	Synergistic	Synergistic
[100 μ M]	CAT/GA	CAT/EGCG	GA/EGCG	CAT/GA/EGCG
Non-encapsulated				
Expected	\geq 100.00	\geq 100.00	\geq 100.00	\geq 100.00
Observed	93.34 \pm 0.78	98.46 \pm 0.62	101.62 \pm 0.88	99.10 \pm 0.49
Interaction	Additive	Additive	Additive	Additive
Encapsulated				
Expected	\geq 100.00	\geq 100.00	\geq 100.00	\geq 100.00
Observed	95.75 \pm 1.39	98.91 \pm 0.71	102.14 \pm 0.68	100.58 \pm 0.57
Interaction	Additive	Additive	Additive	Additive

CAT – catechin, GA – gallic acid, EGCG – epigallocatechin gallate. The * denotes significant ($p < 0.05$) difference between the expected and observed values in the same column for non-encapsulated and encapsulated samples. +Gallic acid had 29 no quantifiable activity.