

Supplementary material

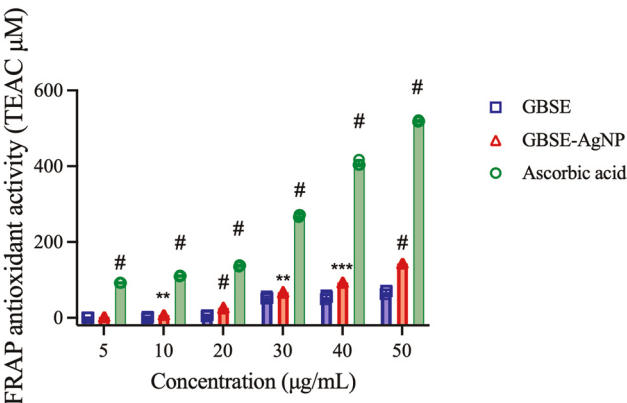


Figure S1: FRAP antioxidant activity of GBSE, GBSE-AgNPs, and ascorbic acid (5–50 μg/mL).

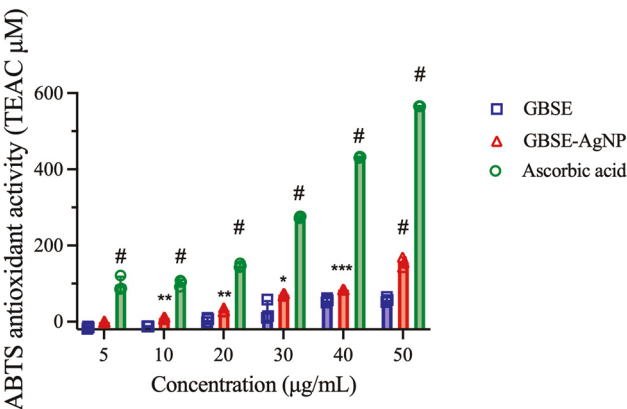


Figure S2: ABTS antioxidant activity of GBSE, GBSE-AgNPs, and ascorbic acid (5–50 μg/mL). Statistical significance: * $p > 0.05$, ** $p > 0.01$, *** $p > 0.001$, # $p > 0.0001$.

Table S1: Factors and levels in Box-Behnken design test for synthesized GBSE-AgNPs

Factor	Level		
	–1	0	1
A:Ratio (GBSE:AgNO ₃ , v/v)	20	50	80
B:Temp. (reaction temperature/°C)	85	90	95
C:Time (reaction time/min)	120	180	240

Table S2: Box-Behnken design and the absorbance of synthesized GBSE-AgNPs

Run	A:Ratio %	B:Temp. °C	C:Time min	Abs. a.u.
1	0	–1	1	0.6198
2	1	1	0	0.536533
3	0	0	0	0.4966
4	0	0	0	0.483367
5	0	–1	–1	0.3457
6	0	1	1	0.9623
7	0	0	0	0.553033
8	–1	0	–1	0.3623
9	–1	–1	0	0.4586
10	1	–1	0	0.461067
11	0	0	0	0.5026
12	0	0	0	0.583833
13	1	0	–1	0.471
14	–1	0	1	0.698333
15	–1	1	0	0.770867
16	0	1	–1	0.750267
17	1	0	1	0.473933

Table S3: ANOVA for response surface quadratic model analysis of variance

Source	Sum of squares	df	Mean square	F-value	p-value	Significant level
Model	0.37	9	0.041	10.41	0.0027	Significant
A-Ratio	0.015	1	0.015	3.80	0.0923	
B-Temp.	0.16	1	0.16	40.51	0.0004	
C-Time	0.085	1	0.085	21.41	0.0024	
AB	0.014	1	0.014	3.53	0.1024	
AC	0.028	1	0.028	6.98	0.0333	
BC	9.631×10^{-004}	1	9.631×10^{-004}	0.24	0.6376	
A^2	0.019	1	0.019	4.85	0.0636	
B^2	0.043	1	0.043	10.70	0.0136	
C^2	8.575×10^{-003}	1	8.575×10^{-003}	2.16	0.1853	
Residual	0.028	7	3.974×10^{-003}			
Lack of Fit	0.021	3	6.845×10^{-003}	3.76	0.1167	Not significant
Pure Error	7.283×10^{-003}	4	1.821×10^{-003}			
Total	0.40	16				
R^2	0.9305		Adj- R^2	0.8410		

Table S4: Monosaccharide composition of GBSE-AgNP

Monosaccharide composition (μg/mL, %)											
Mannose	Ribose	Rhamnose	Glucuronic acid	Galacturonic acid	N-acetyl-glucosamine	Glucose	N-acetyl-galactose aminosus	Galactose	Xylose	Arabinose	Fucose
0.628	0.325	0.245	3.815	0.000	0.000	126.036	0.000	0.845	0.000	0.480	0.000