

supplementary materials

Table S1 Elemental analysis of fullerol

Weight (mg)	Number	N Area	C Area	H Area	S Area	N (%)	C (%)	H (%)	S (%)
1.6660	1	0	19 038	3 829	53	0.00	37.97	2.453	0.186

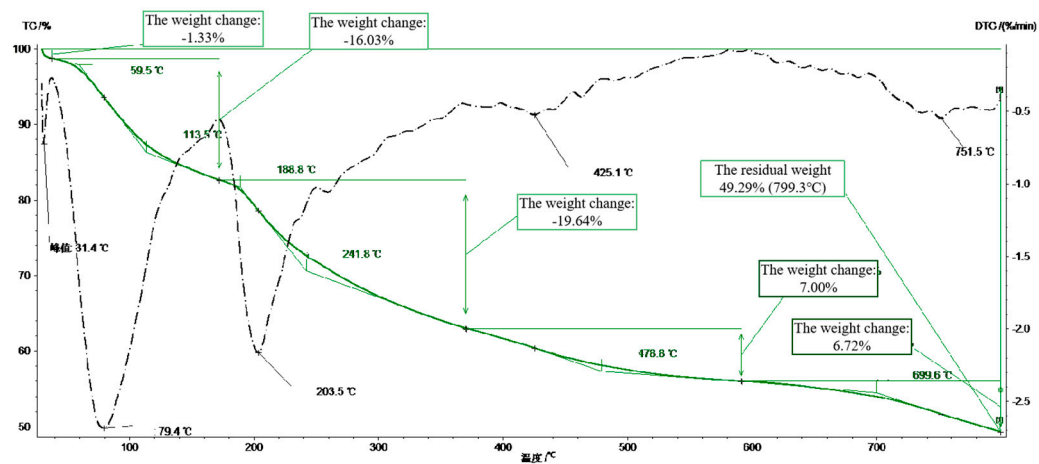


Figure S1. TG-GTA of fullerol

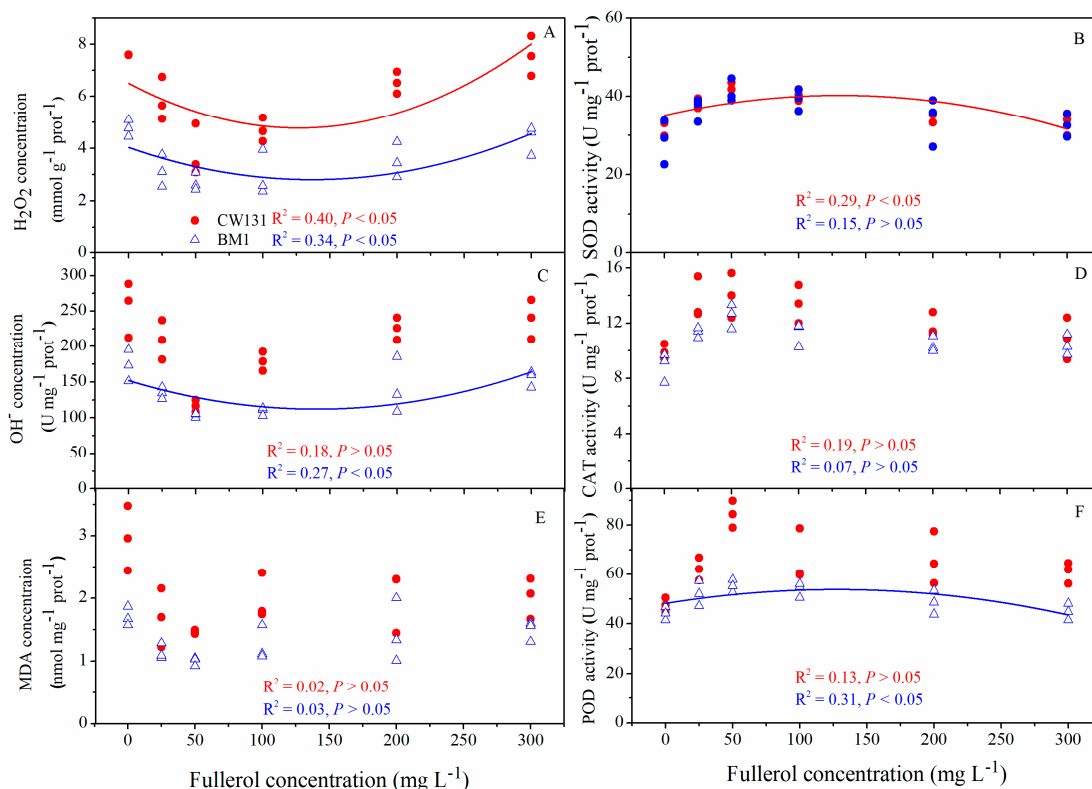


Figure S2. Contents of hydrogen peroxide (H₂O₂) (A), hydroxyl radical (·OH) (C), malondialdehyde (MDA) (E), and Activities of antioxidant enzymes: superoxide dismutase (SOD) (B), catalase (CAT) (D), and pe-oxidase (POD) (F) of two winter cultivars (CW131 and BM1) plotted against six concentrations of fullerol (0, 20, 50, 100, 200, 300 mg L⁻¹).

Table S2. The result comparing the regression curve of the response of hydrogen peroxide (H₂O₂) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	df of regression	df of error	F value	P	R ²
CW131	Linear (x as contious variable)	1	16	2.090	0.168	0.060
	One-way ANOVA (x as discrete variable)	5	12	15.980	< 0.001	0.815
	Quadratic (x as contious variable)	2	15	6.726	0.008	0.403
	lack of fit between Linear and Quadratic	-1		10.166	0.006	
	lack of fit between One-way ANOVA and Quadratic	3		12.149	< 0.001	
	Linear (x as contious variable)	1	16	0.624	0.441	-0.023
BM1	One-way ANOVA (x as discrete variable)	5	12	5.825	0.006	0.587
	Quadratic (x as contious variable)	2	15	5.336	0.018	0.338
	lack of fit between Linear and Quadratic	-1		9.709	0.007	

lack of fit between One-way ANOVA and Quadratic	3	4.009	0.034
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Table S3. The results comparing the regression curve of the response of hydroxyl radical ($\cdot\text{OH}$) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	<i>df</i> of regression	<i>df</i> of error	<i>F</i> value	<i>P</i>	<i>R</i> ²
CW131	Linear (x as contious variable)	1	16	1.083	0.314	0.005
	One-way ANOVA (x as discrete variable)	5	12	12.720	< 0.001	0.775
	Quadratic (x as contious variable)	2	15	2.844	0.090	0.178
	lack of fit between Linear and Quadratic	-1		4.376	0.054	
	lack of fit between One-way ANOVA and Quadratic	3		14.270	< 0.001	
BM1	Linear (x as contious variable)	1	16	0.292	0.596	-0.043
	One-way ANOVA (x as discrete variable)	5	12	5.651	0.007	0.578
	Quadratic (x as contious variable)	2	15	4.211	0.035	0.274
	lack of fit between Linear and Quadratic	-1		8.002	0.013	
	lack of fit between One-way ANOVA and Quadratic	3		4.593	0.023	

Table S4. The results comparing the regression curve of the response of malondialdehyde (MDA) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	<i>df</i> of regression	<i>df</i> of error	<i>F</i> value	<i>P</i>	<i>R</i> ²
CW131	Linear (x as contious variable)	1	16	0.225	0.642	-0.048
	One-way ANOVA (x as discrete variable)	5	12	4.800	0.012	0.528
	Quadratic (x as contious variable)	2	15	1.214	0.325	0.025
	lack of fit between Linear and Quadratic	-1		2.186	0.160	
	lack of fit between One-way ANOVA and Quadratic	3		6.328	0.008	
BM1	Linear (x as contious variable)	1	16	0.546	0.471	-0.027
	One-way ANOVA (x as discrete variable)	5	12	2.974	0.057	0.367
	Quadratic (x as contious variable)	2	15	1.243	0.317	0.028
	lack of fit between Linear and Quadratic	-1		1.909	0.187	
	lack of fit between One-way ANOVA and Quadratic	3		3.683	0.043	

Table S5. The results comparing the regression curve of the response of superoxide dismutase (SOD) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	<i>df</i> of regression	<i>df</i> of error	<i>F</i> value	<i>P</i>	<i>R</i> ²
CW131	Linear (x as contious variable)	1	16	1.191	0.291	0.011
	One-way ANOVA (x as discrete variable)	5	12	20.050	< 0.001	0.849
	Quadratic (x as contious variable)	2	15	4.408	0.031	0.286
	lack of fit between Linear and Quadratic	-1		7.166	0.017	
	lack of fit between One-way ANOVA and Quadratic	3		19.568	< 0.001	
	Linear (x as contious variable)	1	16	0.252	0.623	-0.046
BM1	One-way ANOVA (x as discrete variable)	5	12	3.707	0.029	0.443
	Quadratic (x as contious variable)	2	15	2.521	0.114	0.152
	lack of fit between Linear and Quadratic	-1		4.732	0.046	
	lack of fit between One-way ANOVA and Quadratic	3		3.618	0.046	

Table S6. The results comparing the regression curve of the response of catalase (CAT) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	<i>df</i> of regression	<i>df</i> of error	<i>F</i> value	<i>P</i>	<i>R</i> ²
CW131	Linear (x as contious variable)	1	16	0.953	0.344	-0.003
	One-way ANOVA (x as discrete variable)	5	12	4.887	0.011	0.533
	Quadratic (x as contious variable)	2	15	3.053	0.077	0.195
	lack of fit between Linear and Quadratic	-1		4.920	0.042	
	lack of fit between One-way ANOVA and Quadratic	3		4.631	0.023	
	Linear (x as contious variable)	1	16	0.063	0.805	-0.058
BM1	One-way ANOVA (x as discrete variable)	5	12	7.502	0.002	0.657
	Quadratic (x as contious variable)	2	15	1.627	0.229	0.069
	lack of fit between Linear and Quadratic	-1		3.182	0.095	
	lack of fit between One-way ANOVA and Quadratic	3		9.562	0.002	

Table S7. The results comparing the regression curve of the response of peroxidase (POD) to fullerol addition. These regressions were done using linear model, quadratic model, and One-way ANOVA model via lack of fit test function of the library of R.

	Source	<i>df</i> of regression	<i>df</i> of error	<i>F</i> value	<i>P</i>	<i>R</i> ²
CW131	Linear (x as continuous variable)	1	16	0.025	0.876	−0.061
	One-way ANOVA (x as discrete variable)	5	12	8.299	0.001	0.682
	Quadratic (x as continuous variable)	2	15	2.287	0.136	0.132
	lack of fit between Linear and Quadratic	−1		4.544	0.050	
	lack of fit between One-way ANOVA and Quadratic	3		9.665	0.002	
	Linear (x as continuous variable)	1	16	1.591	0.225	0.034
	One-way ANOVA (x as discrete variable)	5	12	4.782	0.012	0.527
BM1	Quadratic (x as continuous variable)	2	15	4.778	0.025	0.308
	lack of fit between Linear and Quadratic	−1		7.335	0.016	
	lack of fit between One-way ANOVA and Quadratic	3		3.312	0.057	