

Supplementary Material

Biochemical and molecular approach of oxidative damage triggered by water stress and rewatering in sunflower seedlings of two inbred lines with different ability to tolerate water stress

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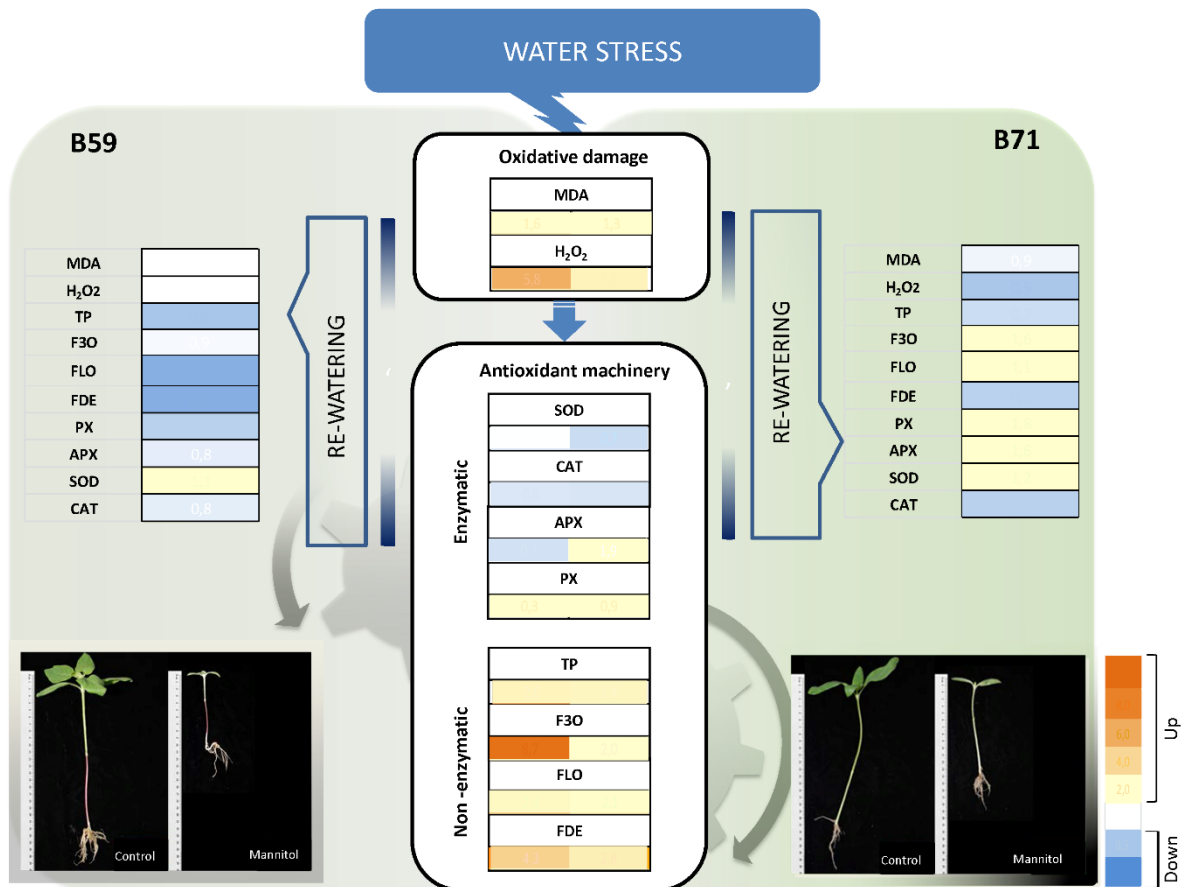


Fig. S1. A schematic model showing enzymatic and nonenzymatic antioxidant mechanisms displayed by sunflower seedlings of two inbred lines against the oxidative damage triggered by water stress and subsequent rewatering. H₂O₂, hydrogen peroxide; MDA, malondialdehyde; PX, peroxidase; APX, ascorbate peroxidase; SOD, superoxide dismutase; CAT, catalase; TP, total phenols; F3O, flavan-3-ols; FLO, flavonols; FDE, flavonoids.

Table S1. Correlation coefficients of antioxidant activity and phenolic compounds in shoot and roots of B59 and B71 sunflower seedlings

*Correlation is significant at $P < 0.05$.

Pearson correlation	R	R²	P-value
<i>Shoot of B59 line</i>			
Total phenols vs. antioxidant activity	0.93	0.86	0.07
Flavonols vs. antioxidant activity	0.7	0.49	0.29
Flavonoids vs. antioxidant activity	0.84	0.70	0.16
Flavan-3-ols vs. antioxidant activity	0.73	0.54	0.26
<i>Roots of B59 line</i>			
Total phenols vs. antioxidant activity	0.98	0.95	0.02*
Flavonols vs. antioxidant activity	1.00	1.00	0.0024*
Flavonoids vs. antioxidant activity	0.99	0.99	0.005*
Flavan-3-ols vs. antioxidant activity	-0.26	0.07	0.735
<i>Shoot of B71 line</i>			
Total phenols vs. antioxidant activity	0.57	0.32	0.434
Flavonols vs. antioxidant activity	-0.08	0.01	0.922
Flavonoids vs. antioxidant activity	0.3	0.09	0.699
Flavan-3-ols vs. antioxidant activity	0.57	0.32	0.432
<i>Roots of B71 line</i>			
Total phenols vs. antioxidant activity	0.05	0.0023	0.9518
Flavonols vs. antioxidant activity	0.79	0.63	0.209
Flavonoids vs. antioxidant activity	-0.22	0.05	0.779
Flavan-3-ols vs. antioxidant activity	0.72	0.52	0.277

Table S2. Correlation (R) and coefficient of determination (R²) derived from simple linear regression analysis between variables related to antioxidant activity in B59 and B71 sunflower seedlings

*Values are significantly different at $P < 0.05$

Line	Organ	Variables	R	R ²	P-value of linear regression coefficients
B59	Shoot	MDA vs. H ₂ O ₂	0,85	0,72	0,1543
		MDA vs. TP	0,26	0,07	0,7356
		MDA vs. Fle	0,48	0,23	0,5180
		MDA vs. Flo	-0,18	0,03	0,8195
		MDA vs. Fde	0,14	0,02	0,8638
		H ₂ O ₂ vs. TP	0,72	0,52	0,2763
		H ₂ O ₂ vs. Fle	0,75	0,56	0,2547
		H ₂ O ₂ vs. Flo	0,26	0,07	0,7378
		H ₂ O ₂ vs. Fde	0,57	0,33	0,4267
		MDA vs. PX	-0,17	0,03	0,8304
		MDA vs. APX	-0,98	0,97	0,0179*
		MDA vs. SOD	-0,02	0,00	0,9765
		MDA vs. CAT	-0,82	0,67	0,1831
		H ₂ O ₂ vs. PX	0,38	0,15	0,6175
		H₂O₂ vs. APX	-0,91	0,83	0,0874
H ₂ O ₂ vs. SOD	0,50	0,25	0,5045		
H₂O₂ vs. CAT	-0,98	0,95	0,0245*		
B59	Roots	MDA vs. H ₂ O ₂	0,37	0,14	0,6312
		MDA vs. TP	0,56	0,31	0,4443
		MDA vs. Fle	0,37	0,14	0,6278
		MDA vs. Flo	0,53	0,28	0,4712
		MDA vs. Fde	0,57	0,32	0,4303
		H ₂ O ₂ vs. TP	0,17	0,03	0,8315
		H ₂ O ₂ vs. Fle	0,85	0,71	0,1549
		H ₂ O ₂ vs. Flo	0,10	0,01	0,8987
		H ₂ O ₂ vs. Fde	0,26	0,07	0,7377
		MDA vs. PX	-0,30	0,09	0,7025
		MDA vs. APX	0,62	0,38	0,3865
		MDA vs. SOD	-0,80	0,64	0,2027
		MDA vs. CAT	-0,58	0,34	0,4187
		H₂O₂ vs. PX	-1,00	0,99	0,0032*
		H ₂ O ₂ vs. APX	0,40	0,16	0,6031
H ₂ O ₂ vs. SOD	-0,21	0,04	0,7915		
H ₂ O ₂ vs. CAT	-0,25	0,06	0,7496		
B71	Shoot	MDA vs. H ₂ O ₂	0,70	0,49	0,2992
		MDA vs. TP	0,81	0,65	0,1927
		MDA vs. Fle	-0,12	0,01	0,8818
		MDA vs. Flo	1,00	1,00	0,0016*
		MDA vs. Fde	0,77	0,60	0,2284
		H₂O₂ vs. TP	0,98	0,97	0,0159*
		H ₂ O ₂ vs. Fle	0,00	0,00	0,9961
		H ₂ O ₂ vs. Flo	0,71	0,51	0,287
		H ₂ O ₂ vs. Fde	0,59	0,35	0,4066
		MDA vs. PX	0,81	0,66	0,1855
		MDA vs. APX	0,68	0,46	0,3211
		MDA vs. SOD	0,21	0,04	0,7936
		MDA vs. CAT	-0,89	0,79	0,1136
H ₂ O ₂ vs. PX	0,17	0,03	0,8256		

		H₂O₂ vs. APX	0,92	0,85	0,0738
		H ₂ O ₂ vs. SOD	-0,55	0,30	0,4495
		H ₂ O ₂ vs. CAT	-0,51	0,26	0,4876

B71	Root	MDA vs. H ₂ O ₂	0,88	0,78	0,1181
		MDA vs. TP	0,02	0,00	0,9813
		MDA vs. Fle	-0,68	0,46	0,32
		MDA vs. Flo	-0,74	0,55	0,2573
		MDA vs. Fde	0,28	0,08	0,7158
		H ₂ O ₂ vs. TP	0,40	0,16	0,5953
		H ₂ O ₂ vs. Fle	-0,63	0,40	0,3658
		H ₂ O ₂ vs. Flo	-0,40	0,16	0,5973
		H ₂ O ₂ vs. Fde	0,67	0,44	0,3333
		MDA vs. H ₂ O ₂	0,88	0,78	0,1181
		MDA vs. PX	-0,95	0,90	0,0504
		MDA vs. APX	-0,94	0,89	0,0550
		MDA vs. SOD	0,08	0,01	0,9161
		MDA vs. CAT	0,95	0,91	0,0477*
		H₂O₂ vs. PX	-0,94	0,89	0,0575
		H ₂ O ₂ vs. APX	-0,78	0,60	0,2228
		H ₂ O ₂ vs. SOD	-0,39	0,16	0,6058
		H ₂ O ₂ vs. CAT	0,71	0,51	0,2855