

Elevated CO₂ and/or ozone modify lignification in the wood of poplars (*Populus tremula x alba*)
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Supplementary Table S1. Primers used in quantitative real-time PCR

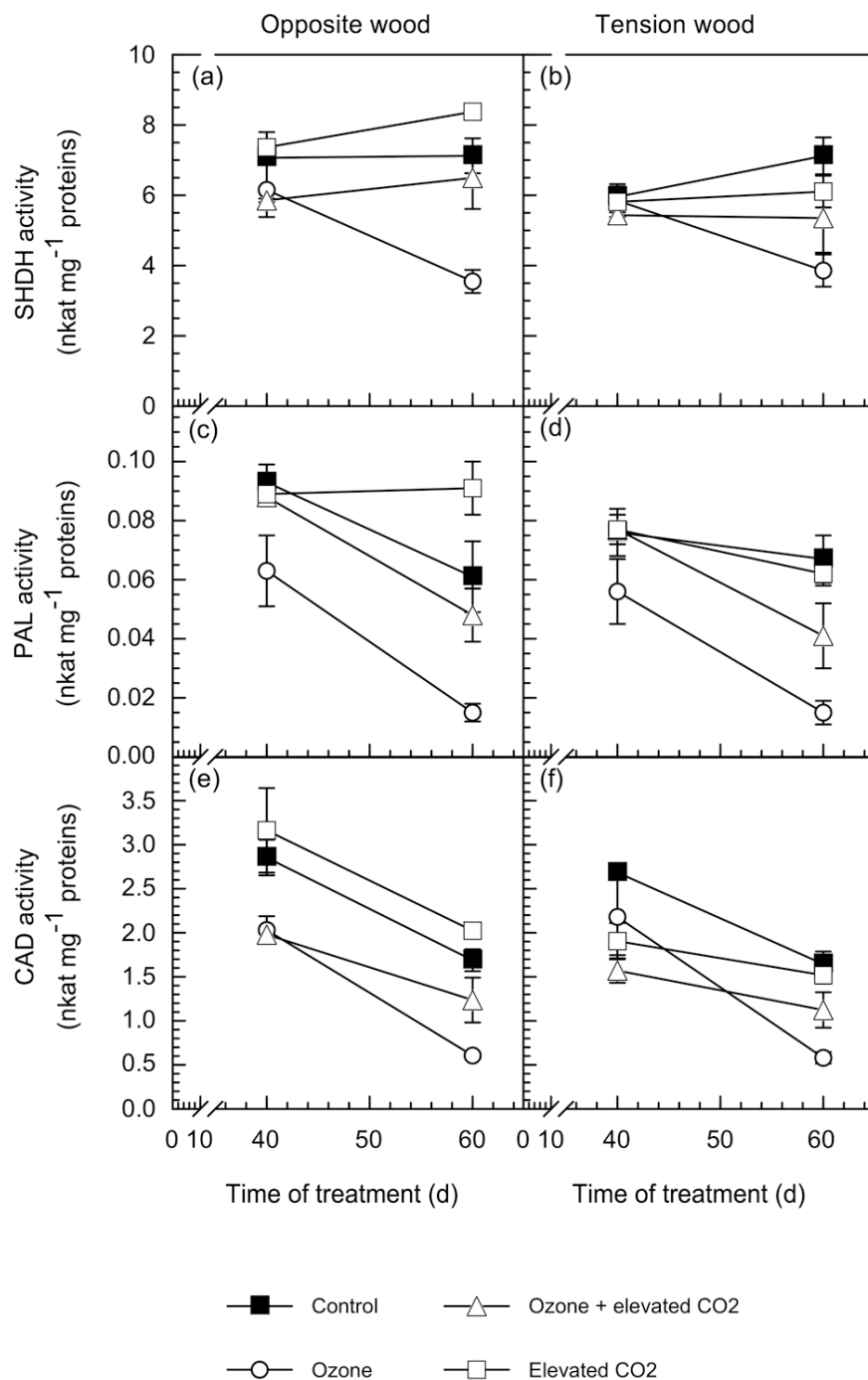
<i>Gene</i>	<i>Forward primer</i>	<i>Reverse primer</i>
<i>PAL 1/3</i>	CCATCCAGGTCAAATTGAGGCTGCT	ACTTCTTAGCTGCCTTCATGTAAGCT
<i>PAL 2</i>	CCTAGAAGCCATCACCAAGTTGCTC	GTTTCTCCATTGGGTCCCACG
<i>PAL 4</i>	AAAGGTGCCGAAATTGCCATGG	TGCAGAAATCAAGCCCAAGGAG
<i>PAL 5</i>	GAGATGCTGGAAGCTATCACCAAGC	GGCTCTCCATTGGGTCCAAC
<i>C4H1</i>	AATGGGGGTGTCACGTGTAATCT	GGAAAGGTGCTCAATCAAAATCT
<i>C4H2</i>	GAAATGTGCAATTGATCATATTTTG	ATTGCAGCAACATTGATGTTCTCC
<i>4CL3</i>	CCAGGCATATAACTGAAGACGTTA	GTTCTTACGTTTGGTACGTGTCTT
<i>4CL5</i>	GTGATCATGCTCATCCTGCCAAGT	TTGGCAGCAGTAGTAATGGCACCT
<i>CCR2</i>	GCTAGGGAAAGGAGCATATTAAGA	CCACAAATACAAGTTGAACATTTGA
<i>CAD1</i>	TGACCGTCTGTCTTTGCTTTTAAA	GGACAGATCACCCAGATGCA
<i>HCT1</i>	TGCAAGCTGAACACATGAACTAT	GGACAGAAACCATGACAGGATAAT
<i>C3H3</i>	ACAAACGTGTTGCTGTTGATATT	TTGACAGAGATTCGTTGACATTT
<i>CCoAOMT1</i>	ACCTGCCAGTATTGTTATCTGATGT	CCATTGAAATACAAAGTGGGTAAAA
<i>CCoAOMT2</i>	TTACCGACCTTGCTTATATTTTGTA	ACAGCGTGATAAGTACTTGGTTAAA
<i>CAld5H1</i>	TTTGCATGTTTTTTTCTAGTTTTT	TCTCTCCATTTTTTATCTCTTCATT
<i>CAld5H2</i>	AAGCCAATATAGGCAAGCCTGTGAATC	ATTTTTAGCCCCGAAAGCTGCTCTG
<i>COMT2</i>	TGCTGCTGTCTCTGCTTTTGAT	GGAAGGCGGTGAAGTTATTTGA

Supplementary Table S2. Statistical analyses of transcript levels of different genes involved in lignin biosynthesis in lower stems. Analyses were performed on opposite wood (OW) and tension wood (TW) by comparing the control to the other treatments. The difference between control and treatments was statistically significant at $P < 0.05$ (red) or $P < 0.1$ (brown). Control (C), ozone 200 nl l⁻¹ (O₃), elevated CO₂ 800 μl l⁻¹ (CO₂) and the combination of ozone and elevated CO₂ (O₃ + CO₂).

Gene	Tissue	C vs CO ₂	C vs O ₃ + CO ₂	C vs O ₃
<i>PAL1/3</i>	OW	0.073	0.108	0.080
	TW	0.223	0.275	0.079
<i>PAL2</i>	OW	0.265	0.104	0.003
	TW	0.401	0.400	0.249
<i>PAL4</i>	OW	0.953	0.473	0.011
	TW	0.064	0.006	0.000
<i>PAL5</i>	OW	0.190	0.354	0.003
	TW	0.041	0.012	0.001
<i>C4H1</i>	OW	0.960	0.480	0.001
	TW	0.121	0.096	0.001
<i>C4H2</i>	OW	0.473	0.070	0.009
	TW	0.018	0.003	0.001
<i>4CL3</i>	OW	0.904	0.151	0.002
	TW	0.073	0.026	0.001
<i>4CL5</i>	OW	0.903	0.831	0.004
	TW	0.209	0.159	0.008
<i>CCR2</i>	OW	0.204	0.010	<0.0001
	TW	0.559	0.000	<0.0001
<i>CAD1</i>	OW	0.364	0.223	0.057
	TW	0.822	0.005	0.001
<i>HCT1</i>	OW	0.203	0.133	0.008
	TW	0.225	0.101	0.003
<i>C3H3</i>	OW	0.981	0.294	0.008
	TW	0.204	0.251	0.008
<i>CCoAOMT1</i>	OW	0.738	0.230	0.023
	TW	0.221	0.210	0.021
<i>CCoAOMT2</i>	OW	0.334	0.300	0.001
	TW	0.377	0.029	0.001
<i>CAld5H1</i>	OW	0.922	0.142	0.031
	TW	0.855	0.139	0.022
<i>CAld5H2</i>	OW	0.691	0.608	0.011
	TW	0.036	0.110	0.002
<i>COMT2</i>	OW	0.651	0.624	0.006
	TW	0.265	0.488	0.004

Supplementary Table S3 : Lignin and extractive content relative to dry mass (DM) in opposite (OW) and tension wood (TW) of lower and middle stems of hybrid poplar, after 60 days of growth under different conditions, control (filtered air), elevated CO₂ (800 µl l⁻¹), ozone (200 nl l⁻¹) or the combination of elevated CO₂ and ozone. Values are mean ± SE, *n* = 3. Difference between the control and treatments was statistically significant at *P* < 0.05 (**), *P* < 0.1 (*).

	Control	Elevated CO ₂	elevated CO ₂ and ozone	Ozone
Klason Lignin (% DM)				
Lower Stem				
OW	16.67 ± 0.39	17.04 ± 0.17	18.69 ± 0.23 **	17.76 ± 0.50 *
TW	13.75 ± 0.27	13.75 ± 0.35	14.99 ± 0.36 **	14.16 ± 0.33
Middle Stem				
OW	16.52 ± 0.22	16.42 ± 0.25	17.69 ± 0.37 **	17.05 ± 0.10
TW	14.62 ± 0.31	13.79 ± 0.51	14.92 ± 0.53	15.34 ± 0.66
Extractives (% DM)				
Lower Stem				
OW	22.64 ± 2.83	29.21 ± 0.93 **	24.27 ± 1.52	22.88 ± 1.88
TW	21.39 ± 1.09	26.80 ± 0.42 **	24.00 ± 1.18 *	22.08 ± 0.25
Middle Stem				
OW	26.96 ± 1.16	30.75 ± 0.35 **	26.59 ± 1.67	26.58 ± 0.47
TW	23.30 ± 0.67	31.13 ± 2.31 **	28.52 ± 1.62 *	26.84 ± 1.81



Supplementary Fig. S1. Time course of the activities of SHDH (a, b), PAL (c, d) and CAD (e, f) enzymes in opposite wood (a, c, e) and tension wood (b, d, f) of middle stem from hybrid poplar subjected to different treatments. Values are mean \pm SE, $n = 3$.