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Poster Abstract - D.23

DIFFERENTIAL EXPRESSIONS OF POPLAR SUPEROXIDE DISMUTASE AND ASCORBATE PEROXIDASE GENES IN RESPONSE TO DROUGHT IN CAMBIUM AND LEAVES OF *POPULUS ALBA V. VILLAFRANCA*

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In this study, we investigated in poplar (*Populus alba v. villafranca*) the effects of drought on expression genes encoding for SOD and APX. These enzymes play an important role in the defence against cell oxidation induced during stress conditions and in plants the SOD and APX genes are known to be spatially and developmentally regulated.

Trees of *Populus alba v. villafranca*, were grown under well-watered conditions and then subjected to a moderate stress treatment by the 50% reduction of optimal water requirement. To evaluate physiological responses to drought at the whole-tree level, we used as indicator the radial growth of cambium determined by a non destructive automated system. After 23 days of moderate stress a growth difference of 37% due to the cambial activity was observed. At this critical time samples were taken for RNA extraction. The expression profiles of the components of SOD and APX gene families were analysed in cambium and leaves. Transcript analysis was carried out by means of relative quantitative RT-PCR (RQ RT-PCR) using specific primers for each gene and tubuline as housekeeping gene. The data evidenced that the transcription levels of antioxidant genes were higher in leaves than in the cambium, furthermore interesting differences were observed among the SOD genes. In particular, the increase of *Mnsod* transcripts in stressed tissues suggested a strong involvement of mitochondria in the drought response.