



EFFECT OF TWO DIFFERENT AMBIENT OZONE CONCENTRATIONS ON ANTIOXIDATIVE ENZYMES IN LEAVES OF TWO TOBACCO CULTIVARS WITH CONTRASTING OZONE SENSITIVITY

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Received February 4, 2009; revision accepted September 2, 2009

Eight-week-old tobacco (*Nicotiana tabacum* L.) Bel W3 (ozone sensitive) and Bel B (ozone resistant) cultivars were exposed to ozone for two weeks at two sites with differing tropospheric ozone levels in five independent series from May 27 to July 25, 2004. After each exposition, the degree of ozone-caused visible leaf damage and the activity of APX, GuPX, and SOD were examined. Visible leaf damage was observed only in the sensitive cultivar; the resistant one did not exhibit any external symptoms. Three-way ANOVA revealed that the activity of all enzymes varied by exposure site, series and cultivar effects. Significant correlations between GuPX activity in the two cultivars and with the degree of leaf damage to the sensitive cultivar were found. This indicates that GuPX activity in the sensitive as well as in the resistant cultivars track changes in tropospheric ozone levels. The positive correlation between ozone level and APX activity in the resistant cv. Bel B, which did not reveal visible symptoms, indicates that this enzyme may contribute to detoxication of H₂O₂ and alleviation of oxidative damage caused by O₃.

Key words: Tobacco, tropospheric ozone, ascorbate peroxidase, guaiacol peroxidase, superoxide dismutase.

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