



Physiological response of chestnut (*Aesculus Hippocastanum* L.) roadside trees to pollution

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Roadside trees are exposed to greater pollution caused both by exhaust emissions and road salt usage in winter months. To examine the pollution effects on *Aesculus hippocastanum* L. trees, leaves from damaged plants, located near the roadside were compared to leaves from healthy trees, located far away from the road. The plants from the roadside environment displayed marginal leaf necrosis accompanied by chlorosis. The Na⁺ and Cl⁻ concentrations in the necrotic leaves were two- and 14-fold higher, respectively, compared to those of the control plants. This increase was correlated with a decrease in chlorophyll concentration in leaves. The latter may be explained as a result of high Cl⁻ concentration. This effect is further amplified by a simultaneously high Na⁺ concentration. The dehydration rate in leaves with toxicity symptoms was higher than in healthy ones, indicating an uncontrolled transpiration. Salt stress induced Na⁺ toxicity which caused an apparent K⁺ deficiency, primarily affecting stomatal closure. Furthermore, it caused high transpiration and loss of water. This may explain the appearance of marginal necrosis. In those trees located near the roadside high calcium, potassium, magnesium, copper, and iron concentrations were determined which are accompanied by a simultaneous deficiency of phosphorus and manganese.