



Microscopic symptoms and antioxidant responses as integrated measurements of tolerance to air pollutants in *Tibouchina pulchra*

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The air pollutants emitted from petrochemical industries such as sulphur oxides, nitrogen oxides and particulate matter are damaging the Atlantic Forest that covers the slopes of the coastal mountains, in the Cubatão city – southeast Brazil. *Tibouchina pulchra* (Cham.) Cogn., a pioneer tree species commonly found in this region, has been used as a biomonitor due to its high tolerance to air pollutants. Therefore, this study aims to verify whether the combined analyses of intensification of antioxidant in response to oscillations in environmental stress factors and of disorders caused by pollutants at microscopic level, in both young and adult trees is an adequate measurement of tolerance to air pollutants of such species. The experiments have being conducted in five sites at different distances from the main petrochemical industry three on the slopes of the mountains at different altitudes one in the Cubatão downtown and one less influenced by the industrial emissions. The young plants are exposed in each site for consecutive periods of 84 days. The leaf samples have being collected at zero, 42 and 84 days of each exposure experiment. In addition, leaves of six adult trees per site were sampled for the passive biomonitoring. The leaves were fixed and processed according usual techniques for analyses of microscopic injury caused by oxidative stress and indicators of the redox state. Preliminary results indicate that both young and adult trees near the industry present increased concentration of ascorbic acid, decreased concentration of glutathione in both forms, increased lipid peroxidation. They do not accumulate hydrogen peroxide, but phenolic compounds condensed tannins are clearly accumulated in the mesophyll cells, abaxial epidermal cells and subsidiaries cells. These integrated measurements seem to indicate that the species tends to increase its tolerance to oxidative stress by investing on the secondary metabolism.

Palavras-Chave: air pollutants, antioxidant, phenolic compounds, oxidative stress, tolerance

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