

Assessment of trees exposed to air pollutants in traffic and industrial sites at a tropical dry environment **D. SARALA THAMBAVANI AND J.MAHESWARI**

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Author for correspondence :

J. MAHESWARI Department of Chemistry, V.H.N.S.N.College, VIRUDHUNAGAR (T.N.) INDIA Email: maheswarivaseekaran @gmail.com See end of the article for Coopted authors' **SUMMARY :** The study examined the monthly variation of Air Pollution Tolerance Indices (APTI) of trees around the selected sites of study area. Site -1 is a residential area which was considered as control site, site-2 is located in a heavily polluted traffic junction and site-3 is in a industrially polluted region. Bio monitoring of air pollution had been carried out in these sites. Biochemical parameters taken in to consideration were total chlorophyll, relative moisture content, pH and ascorbic acid of matured leaf samples. The present study suggests that plants have the potential to serve as excellent monitors of air pollution. The study summarized the results on biomonitoring of local plant species along various sites. Mangifera indica showed higher tolerance for automobile pollution through out the study period (Dec., 2010 to May, 2011). Tree species *Eugenia jambolana* showed higher tolerance for industrial pollution during this period of analysis. In the months of December, 2010 and January, 2011, Millingtonia hortensis became sensitive for air pollutants. So it can be an effective indicator for air pollution in these months. And overall high tolerance of plants was observed in the month of May, 2011.

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Pegetation is an effective indicator of the overall impact of air pollution and the observed result is more reliable one in a short period. However, plants maintained a balance between the injury caused by the pollutants and the homeostatic process governing repair. Analysis of four parameters such as ascorbic acid content, total chlorophyll content, leaf extracts pH and relative water content are considered as bio indicators of pollutants. The air pollutants from various sources include oxides of nitrogen, oxides of sulphur and particulates. Oxides of nitrogen damage the leaves of plants, retard the photosynthetic activity (Tthambavani and Kamala, 2010).

Ascorbate reduces glutathione and peroxidase are important superoxide scavengers in the chloroplast. The significance of each of these scavengers is dependent on their concentration and rate constant for the conversion of superoxide radicals. Freebairn and Taylor (1960) made tissue analysis of smog sensitive plants sprayed with ascorbic acid. They found that concentrations of ascorbic acid in the leave increased and resulted in partial to complete protection from air-pollution injury. One of the most common impacts of air pollution is the gradual disappearance of chlorophyll. The decrease in chlorophyll content was depending upon the increasing pollution load in high traffic areas .The level of toxicity may be responsible for lowering the levels of total chlorophyll (Joshi and Swami, 2007).

The high pH may increase the efficiency of the conversion from hexose sugar to ascorbic acid (Escobedo *et al.*, 2008) while low leaf pH extract showed good correlation with sensitivity to air pollution and also reduces photosynthesis in plants. The photosynthetic efficiency strongly is dependent on leaf pH (Yan-ju and Hui ding, 2008) the photosynthesis was reduced in plants with low pH (Turk and Wirth, 1975). The leaf extract pH in plants increased due to basic pollutants present at the polluted site. The relative water