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AIR POLLUTION INDUCED BIOCHEMICAL CHANGES IN THE SELECTED ROADSIDE ORNAMENTAL TREE IN LUDHIANA CITY, INDIA

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Abstract

Plants are affected by various forms of anthropogenic pollution. Monitoring environmental pollution using compounds that accumulate in living organisms, such as plants, is an effective method. This study investigated and compared plants from two distinct locations in Ludhiana city, India: a control site within a university campus and a polluted site along a roadside area. Using spectrophotometry, the levels of carotenoids, total soluble sugars, and total phenolic compounds were analyzed in leaves of eight common roadside ornamental tree species (*Acacia auriculiformis*, *Alstonia scholaris*, *Cassia fistula*, *Cassia siamea*, *Chukrasia tabularis*, *Dalbergia sissoo*, *Heterophragma adenophyllum*, and *Putranjiva roxburghii*). Leaf samples collected from both sites underwent analysis. Trees at the polluted site exhibited significantly higher levels of total phenolic compounds and lower levels of carotenoids and total soluble sugars in their leaf extracts compared to trees at the control site (P<0.05). These findings highlight the substantial impact of pollution on the biochemical composition of selected trees, indicating adverse effects on plant health. Furthermore, the study suggests potential applications in phytoremediation and proposes the use of plants as bio-indicators for environmental pollution monitoring.

Key words: biochemical indicator, phytoremediation, pollution, roadside trees

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