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Urban Dust Influence on the Foliar Surface and Biochemical Constituents of Selected Plants in the National Capital Region of Delhi, India

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Abstract : Very high loadings of atmospheric dust in the Indian region contribute to remarkably higher levels of particulate matter. During dry weather conditions which prevail most of the year, dustfall is deposited onto the foliar surfaces affecting their morphology, stomata and biochemical constituents. This study reports chemical characteristics of dustfall, its effect on foliar morphology and biochemical constituents of two medicinal plants i.e. Morus (Morus alba) and Arjun (Terminalia arjuna) in the urban environment of National Capital Region (NCR) of Delhi at two sites i.e. Jawaharlal Nehru University (residential) and Sahibabad (industrial). Atmospheric dust was characterized for major anions (F-, Cl-, NO3-, SO4--) and cations (Na+, NH4+, K+, Mg++, Ca++) along with the biochemical parameters Chl a, Chl b, total chlorophyll, carotenoid, total soluble sugar, relative water content (RWC), pH, and ascorbic acid. The results showed that the concentrations of major ions in dustfall were higher at the industrial site as compared to the residential site due to the higher level of anthropogenic activities. Both the plant species grown at industrial site had significantly lower values of chlorophyll 'a', chlorophyll 'b', total chlorophyll, carotenoid but relatively higher values of total soluble sugar and ascorbic acid indicating stressful conditions due to industrial and vehicular emissions.

Keywords : dustfall, urban environment, biochemical constituents, atmospheric dust
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