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ORIGINAL ARTICLE

A COMPARATIVE STUDY OF STOMATAL AND EPIDERMAL CELL CHARACTERS OF SOME RUBIACEAEOUS SPECIES GROWING IN INDUSTRIAL AND VILLAGE AREAS OF HOWRAH DISTRICT, INDIA

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Abstract*: Stomata and epidermal cells are present on the leaf surface and are often directly exposed to the pollutants present in the environment. There are several reports about the changes in the parameters related to stomata and epidermal cells due to environmental pollution. Keeping this in view, a study was conducted on the leaf anatomical characters in some commonly growing Rubiaceae members from the industrial city of Howrah, which was compared with the leaf samples of same species growing in less polluted village area of Gangadharpur, Howrah district, West Bengal. It was found that, the density (number per mm^2 leaf area) of stomata and epidermal cells were increased in polluted area. Oldenlandia corymbosa showed the highest level of increase in stomatal count (32.75%) followed by Ixora coccinea (31.06%), Neolamarckia cadamba (26.66%) and Gardenia jasminoides (16.90%). For epidermal cells also, similar pattern was observed. The stomatal index showed the tendency of decrease in polluted environment, which was very little (0.02%) for Ixora coccinea, 1.5% in Gardenia jasminoides, gradually increased to 4.5% in Oldenlandia corymbosa, which reached the maxima of 13.96% in case of Neolamarckia cadamba. Maximum stomatal clogging was found in Oldenlandia corymbosa (16%), which was 15% in I. coccinea, 8% in N. cadamba and 7% in G. jasminoides, growing in polluted environment. In less polluted area, clogging percentage was found to be <2%. Regarding the size of stomatal opening, the length has been decreased up to 33.3% in O. corymbosa. When the breadth of aperture was considered, the decrease was highest in I. coccinea and O. corymbosa, which was 50%, followed by G. jasminoides (37%) and N. cadamba (32%). The study reveals that characters of stomata and epidermal cells are strong indicators of the presence of pollutants in the environment.*

Key words: Stomata, epidermal cell, stomatal index, stomatal opening, Rubiaceae, pollution.