

A study of foliar epidermal pattern in colchiploid of *Zanthoxylum armatum*

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SUMMARY

Zanthoxylum armatum was explored for the detailed colchicine induced variable characteristics. For the colchiploid plant study, leaves of colchicine treated seedlings were fixed in FAA. The analysis was carried out for control and treated plants using parameters like number of epidermal cells per mm², number of stomata per mm², guard cells index (GCI), size (length × breadth) of stomata (μm²), area of stomatal pore (μm²), pore area index (PAI), total pore area per mm² (TPA) etc. The mean number of epidermal cells in control plants ranged from 50.55 to 61.05; while in treated seedlings mean numbers of epidermal cells at different sites ranged from 35.10 to 44.50 in 1.0 M, 39.55 to 55.33 in 0.50 M and 39.10 to 58.90 in 0.05 M, respectively. During control (all sites), mean length and breadth of stomata ranged from 12.25 to 14.30 μm and 7.20 to 9.45 μm, respectively. In treated plants of all sites (Z-1 to Z-6), mean length and breadth of stomata ranged from 8.85 to 11.00 μm, 5.75 to 7.95 μm in 1.0 M; 13.70 to 18.40 μm, 9.35 to 12.05 μm in 0.50 M and 13.65 to 17.45 μm, 9.40 to 11.40 μm in 0.05 M, respectively. Reduced size of pore area was noticed in higher concentration (1.0 M) of colchicine. Guard cell index in control ranged from 27.90 to 38.59. For 1.0 M treated, range was observed from 23.89 to 33.33. For 0.50 M colchicine concentration, ranged from 37.59 to 45.22, while in 0.05 M treated plants, guard cell index ranged from 39.45 to 45.48, respectively.

Key Words : Colchicine, Colchipooids, Guard cells, Pore area, Total pore area

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The genus *Zanthoxylum* is distributed worldwide from tropical to temperate zones. There are over 200 species from small shrubs to large trees. It has some other synonyms as *Z. planispinum*, *Z. alatum subtrifoliolatum* (French), etc. It is known as winged prickly ash, tejbal, tejphal, timroo or Nepali Dhaniya. It is widely distributed throughout the warmer region of the world, extending into temperate region of Europe, Asia and Australia. About 50 species among 20

genera are reported from India. Out of which 9 species are classed as commercial timbers (Pearson and Brown, 1932). The range of the plant is from Eastern Asia- China to the Himalayas. *Zanthoxylum* is recognized as having medicinal qualities for curing stomachache, toothache, intestinal worms, rheumatism, scabies, snakebites, fever, cholera and used as a flavoring agent or spice for preparation of certain traditional dishes. During winter, a soup made from the dried fruit (locally known as hag) is consumed by the entire family to keep warm in winter. A chutney (like a sauce), locally known as dunkcha, is also a popular food item (Kala *et al.*, 2004). The seed is ground into a powder and used as a condiment (Facciola, 1990). The fruit is rather small but is produced in clusters which make harvesting easy. Each fruit contains a single seed and young leaves are used as condiments (Gupta, 1945; Tanaka, 1976). The fruit contains 1.5 per cent essential oil (Chopra *et al.*, 1976).

The oil obtained from plant is known as *Zanthoxylum* oil or Nepali pepper oil. The essential oil is obtained by stem

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