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Genetic Improvement of Centella asiatica (Linn.) Urban. For Therapeutically Active Compounds

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Abstract : Centella asiatica (L) Urban, commonly known as Brahmi and Mandookaparni is a valuable medicinal plant highly valued for its asiaticoside and madecassoside. It is widely used in Ayurveda and Unani systems of medicine. Attempts are made in the present investigation to improve the genotype of Centella plant that can yield higher amount of the therapeutically active compounds viz., asiaticosides and madecassosides, employing techniques of polyploidy breeding. Young developing shoots of Centella were treated with different concentrations of colchicine for varying time intervals. 0.4 % colchicine for 6 hours duration at room temperature was effective in inducing autopolyploidy in this plant. The colchicine treated plants were allowed to reproduce vegetatively for several generations in a polyhouse. The colchicine treated plants showed significant increase in plant size, fresh & dry weights, vigorous growth, broad leaves and double the number of chromosomes. HPTLC analysis of dried leaves of control and polyploid plants, even after 9th generations, revealed that the tetraploids synthesized at two times more asiaticoside and madecassoside, as compared to control, untreated diploid plants.

Keywords : Centella asiatica, polyploidy, asiaticosides, madecassoside, HPTLC
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