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SOMATIC EMBRYOGENESIS AND PLANTLET REGENERATION IN *MENTHA PIPERITA L.*

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ABSTRACT: An efficient *in vitro* plant regeneration procedure developed for rapid and continuous production of somatic embryos from leaf cultures of *Mentha piperita* L. cv. MP-1, an medicinally important perennial herb belonging to the family Lamiaceae. The pale yellow and friable calli of leaf explant obtained on MS basal medium containing 18.1 μM 2,4- D were differentiated into somatic embryos on ½ MS medium with various auxins (4.5 μM and 9.04 μM 2,4- D, 5.4 μM and 10.8 μM NAA) and cytokinins (4.6 μM and 9.2 μM Kn, 4.4 μM and 8.8 μM BA) in Experiment 1 and ½ MS medium supplemented with auxins (4.9 μM and 9.8 μM IBA or 5.4 μM and 10.8 μM NAA) at a uniform dose of 2.2 μM BA in Experiment 2. Among all combinations of phytohormones tested in both experiments, ½ MS +5.4 μM NAA +2.2 μM BA (Experiment 2) was the most suitable combination, producing an average of 23.4 well developed somatic embryos upto cotyledonary stage within a week. Administration of auxin or cytokinin alone in Experiment 1 as well as IBA in combination with BA in Experiment 2 resulted in differentiation of underdeveloped somatic embryos that did not mature beyond heart and torpedo stage. Majority of the embryoids developed in various hormonal regimes tended to detach themselves at maturity from the parental calli. Most of the embryoids (cotyledonary stage) germinated on hormone free MS medium with 3% sucrose within two weeks of subculture. Plantlets thus obtained were successfully hardened in plastic pots containing soilrite and nurtured with ¼ MS inorganic salts followed by transfer to earthen pots with 50% survival. The induction of somatic embryogenesis and plant regeneration in leaf callus cultures is a novel protocol compatible for genetic transformation procedures aimed at producing genetically engineered *M. piperita* plantlets with high yield and quality of essential oil and adaptive to abiotic and biotic stress.

Key words : *Lamiaceae, leaf callus culture, Somatic embryo*