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Assesment of Genetic Fidelity of Micro-Clones of an Aromatic Medicinal Plant Murraya koenigii (L.) Spreng

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Abstract : Murraya koenigii (L.) Spreng locally known as “Curry patta” or “Meetha neem” belonging to the family Rutaceae that grows wildly in Southern Asia. Its aromatic leaves are commonly used as the raw material for traditional medicinal formulations in India. The leaves contain essential oil and also used as a condiment. Several monomeric and binary carbazol alkaloids present in the various plant parts. These alkaloids have been reported to possess anti-microbial, mosquitocidal, topo-isomerase inhibition and antioxidant properties. Some of the alkaloids reported in this plant have showed anti carcinogenic and anti-diabetic properties. The conventional method of propagation of this tree is limited to seeds only, which retain their viability for only a short period. Hence, a biotechnological approach might have an advantage edging over traditional breeding as well as the genetic improvement of M. koenigii within a short period. The development of a reproducible regeneration protocol is the prerequisite for ex situ conservation and micropropagation. An efficient protocol for high frequency regeneration of in vitro plants of Murraya koenigii via different explants such as- nodal segments, intermodal segments, leaf, root segments, hypocotyle, cotyledons and cotyledonary node explants is described. In the present investigation, assessment of clonal fidelity in the micropropagated plantlets of Murraya koenigii was attempted using RAPD and ISSR markers at different pathways of plant tissue culture technique. About 20 ISSR and 40 RAPD primers were used for all the samples. Genomic DNA was extracted by CTAB method. ISSR primer were found to be more suitable as compared to RAPD for the analysis of clonal fidelity of M. koenigii. The amplifications however, were finally performed using RAPD, ISSR markers owing to their better performance in terms of generation of amplification products. In RAPD primer maximum 75% polymorphism was recorded in OPU-2 series which exhibited out of 04 scorable bands, three bands were polymorphic with a band range of size 600-1500 bp. In ISSR primers the UBC 857 showed 50% polymorphism with 02 band were polymorphic of band range size between 400-1000 bp.

Keywords : genetic fidelity, Murraya koenigii, aromatic plants, ISSR primers
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