

Somatic Embryogenesis and *in vitro* Shoot Propagation of *Picrorhiza kurroa* Royle ex Benth to Develop Seed Production Technology for Traditional Farmers

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Abstract—Standardization of various protocols(SOPs) for plant regeneration via somatic embryogenesis from various strategies including *in vitro* root derived callus might be in practice, present work represent the effort with *Picrorhiza kurroa* Royle ex Benth. Primary callus was induced by culture root explant on Murashige and Skoog medium supplemented with 2,4-D (0.5-3.0 mg/l) in combination with IBA (0.4 mg/l) under light condition. Friable embryogenic mass was observed on MS medium supplemented with IBA (0.4mg/l) and 2,4-D (1.5 mg/l) with 90 % of callus induction frequency and these embryogenic mass were transferred to the medium containing different concentrations of 2,4-D (0.5-2.0mg/l) for induction and maturation of somatic embryos. Among different signaling molecules, 2, 4-D (1.0 mg/l) was recorded the best for the somatic embryos formation in cultures upto 81%. Histological assays confirmed somatic embryo by revealing the presence of different developmental stages of somatic embryogenesis. In order to further confirm these embryos, shoots development was also observed upon transfer of somatic embryos to MS medium containing BA (0.5mg/l) and Kinetin (0.75 mg/l). Which could also be able to induce root, in the combination of synthetic auxin signals (2,4-D 0.5 mg/l and NAA 0.4mg/l) for the best promotion of the highest and the earliest rooting. These embryos are good source for being tested for encapsulation looking towards the problem associated with the planting material which could be developed as a potential technology for stock material to promote the traditional farmers.

Keywords: Embryo, Somatic embryogenesis, *Picrorhiza Kuroa* Royle ex Benth, Encapsulation, Histological assays

References:

- [1] D. Shephrou Helen, Geetanjali Kannoja, A. K. Gaur.(2015) In vitro regeneration of *Picrorhiza kurroa* Royal ex benth for ex situ conservation and sustainable utilization. *Annals of Biological Research* 6 (5):7-14.
- [2] Mahajan R, Kapoor N Singh I (2016) somatic embryogenesis and callus proliferation in *Picrorhiza kurroa* royle ex. Benth. *Journal of Experimental Biology and Agricultural Sciences* 4(2):201-209.