

IN VITRO PROPAGATION OF MUNRONIA PUMILA (BINKOHOMBA)

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Abstract: *Munronia pumila* Wight. (Binkohomba) is a rare endemic medicinal plant found in Sri Lanka. Even though traditional propagation is through seeds, this is not sufficient for commercial scale cultivation due to poor production of seeds and their low viability. Therefore, tissue culture based propagation techniques using mature leaf, petiole, seed and floral parts (petals) as explants were investigated. They were cultured on basic Murashige and Skoog medium with a cytokinin and an auxin at different concentrations. The highest callus formation was observed with mature leaf on 2,4-D (1.1 mg/l) and BAP (0.2 mg/l) in complete darkness. Cotyledon and hypocotyl parts of the seed also produced callus. Shoot formation occurred on the callus of cotyledon and hypocotyl in the presence of BAP and NAA. The hypocotyl callus on 5 mg/l BAP and 2 mg/l NAA, formed multiple shoots. The study suggests the feasibility of micropropagation of *Munronia pumila* through callus from hypocotyl and possibly leaves.

Key words: *Munronia pumila* Wight., *in vitro* culture

INTRODUCTION

Munronia pumila Wight. (S: binkohomba, family: Meliaceae) is a valuable medicinal plant. In Sri Lanka, it is an endemic species growing in rocky places in the low country such as in Ritigala, Sigiriya, Lunugala and Botale. Binkohomba is a small hardy perennial shrub, with a short stem about 5-10 cm long with crowded hairy pinnate leaves with long petioles (Fig. 1). The entire *Munronia* plant is used for medicinal purposes. A decoction of this plant is considered to be an excellent bitter tonic for fever, dysentery and purification of blood.¹ Sri Lankan flora is rich in plant diversity with about 7106 plant species. Of these, approximately 700 species are used in ayurvedic medicine and many of them are endemic to Sri Lanka.^{2,3} *Munronia pumila*, is one of these valuable medicinal plants.

Despite the high demand in the local market (1 kg of the dried plant costs about Sri Lankan Rs 1200/= : US\$ 24), there has been no commercial cultivation of this plant. As a result of over exploitation from the wild, the plant has become rare and if protective measures are not taken, the plant may become extinct in Sri Lanka. *Munronia pumila* flowers irregularly and only a small percentage (about 12%) of flowers yield fruits. Therefore, the number of seeds produced from a plant is low (Gamage, unpublished data). Also the seeds are sterile and the percentage of germination is low. Therefore large scale propagation will be difficult through seeds alone. There is no practice of using stem cuttings. Tissue culture techniques have been successfully used commercially to propagate (micropropagate) large number of angiosperms⁴ and may also be used for *Munronia pumila*. The techniques involved are shoot tip culture, callus cultures, *in vitro* organogenesis and somatic embryogenesis.^{4,5,6}

2,4-D - 2,4 dichloro phenoxy acetic acid, NAA - Naphthalene acetic acid, BAP - Benzyl amino purine