ABSTRACT

The present demand for medicinal plants is increasing in Sri Lanka. Therefore it is necessary to cultivate the medicinal plants in demand. One major constraint in commercial scale cultivation of medicinal plants is shortage of planting materials.

Main emphasis of the present research project is on the development of an *in vitro* micro propagation protocol for the economically important medicinal plants-*Plumbago indica* Linn. and *Ipomoea mauritiana* Linn..

Plumbago indica Linn. is not cultivated systematically in Sri Lanka and has lead to a plant threatened status. At present, conventional methods are being used in plant propagation. There are some drawbacks such as poor seed formation, delayed rooting in cuttings etc. Therefore it is essential to develop an efficient *in vitro* micro propagation technique to obtain true to type plantlets of *P. indica* for commercial level cultivation.
Plant propagation procedure was developed from shoot cultures of *P. indica* The highest percentage of survival was obtained by disinfecting the axillary shoot tip explants with 70 % (v/v) Ethanol for 1 minute, followed by 20 % (v/v) Clorox^{TM} for 20 minutes with 2 drops of Tween 20^{TM}. Explants from axillary shoots were tested for proliferation on basal MS medium with auxins and cytokinins at different concentrations. Proliferation of shoots was observed in the medium containing (1.0 mg / L) BAP and (0.1 mg / L) IAA with 7 % (w /v) agar. Maximum number of 20 shoots per explant was obtained on this medium. For root initiation, shoot clusters were transferred to MS medium with IBA. Optimum root induction was achieved on MS medium with (0.1 mg / L) IBA with the 7 % (w/v) agar at 6 weeks of culture. Rooted plantlets were acclimatized on sterilized potting mixture consisting of compost and sand in the ratio of 1:1, provided with a nutrient medium containing MS salts. High Relative Humidity (90 %) and 50 % light was provided in the nursery during acclimatization. About 80 % of rooted shoots survived after acclimatization.The regenerated plantlets appeared morphologically similar to the mother plants.

Ipomoea mauritiana Jacq. roots which are used to prepare Ayurvedic preparations, are being collected from wild sources, leading to plant becoming threatened. Therefore an efficient *in vitro* micro propagation technique was developed from axillary shoot cultures of *I. mauritiana.* The highest percentage of survival was achieved by disinfecting the explants using 70 % (v/v) ethanol for 1 minute, followed by 20 % (v/v) Clorox^{TM} for 15 minutes. Proliferation of shoots was observed in the medium containing (5.0 mg / L) BAP and (1.0 mg / L) IAA on 7 % (w/v) agar. Maximum number of 8 shoots per explant was obtained on this medium. Optimum root induction was achieved on MS medium supplemented with (2.0 mg / L) IBA on 7 % (w/v) agar after 6 weeks of culture. Rooted plantlets were acclimatized on sterilized potting mixture consisting of compost and sand in the ratio of 1:1. Seventy five percent of rooted shoots survived the acclimatization.