

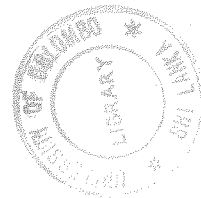
**DEVELOPMENT OF MICROPROPAGATION AND ACCLIMATIZATION
TECHNIQUES FOR FIVE ENDEMIC AND THREATENED AQUATIC
ORNAMENTAL PLANT SPECIES OF SRI LANKA.**

Dissertation submitted in fulfillment of the requirements for the degree of

MASTER OF PHILOSOPHY

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University of Colombo, Sri Lanka
2003

Abstract

In this study, *in vitro* propagation protocols and acclimatization methods were developed for five endemic and threatened aquatic ornamental plant species of Sri Lanka (*Cryptocoryne beckettii*, *C. wendtii*, *C. nevillii*, *C. thwaitesii* and *Lagenandra thwaitesii*).

The four *Cryptocoryne* species and *L. thwaitesii* showed a significant shoot multiplication in Murashige and Skoog media with 6-benzyladenine (BA). The effect of naphthaleneacetic acid (NAA) was not significant for shoot multiplication of these species. *C. beckettii* gave higher shoot multiplication (9.9 shoots/explant) in 2.0 mg/l BA concentrations after 6 weeks. Shoot multiplication of *C. wendtii* (6.5 shoots/explant), *C. nevillii* (7.7 shoots/explant) and *L. thwaitesii* (16.4 shoots/explant) were observed in media with 5.0 mg/l BA without NAA. However, higher shoot multiplication of *C. thwaitesii* was observed in media containing 2.0 mg/l BA (21.1 shoots/explant) and 2.0 mg/l 2iP (29.0 shoots/explant).

In the optimization experiments, the highest shoot multiplication of *C. wendtii* (48.1 shoots/explant in 6 weeks), *C. nevillii* (18.5 shoots/explant in 6 weeks) and *L. thwaitesii* (28.7 shoots/explant in 8 weeks) was achieved in 15.0, 40.0 and 10.0 mg/l BA concentrations. Shoot multiplication of *C. beckettii* in 5.0 mg/l BA was increased from 3.1 to 21.1 (shoots/explant/six weeks) when it reached 6th subculture.

Cryptocoryne thwaitesii and *L. thwaitesii* shoots multiplied in 2.0 mg/l 2iP and 10.0 mg/l BA gave better elongation in liquid medium without any growth regulators.

The four *Cryptocoryne* species and *L. thwaitesii* produced roots in Murashige and Skoog medium without any growth regulators and activated charcoal after 4 weeks. However, addition of activated charcoal (2.0 g/l) to the medium improved the rooting. Rooted *C. beckettii* plants gave 87.5 % plant survival during acclimatization where as *C. wendtii* and *L. thwaitesii* gave 100%. In acclimatization, plant survival and growth was significantly higher in humid chamber than submerged conditions.

The developed protocols for micropropagation of the four *Cryptocoryne* species and *L. thwaitesii* with higher multiplication rates are suitable for commercial scale production. An average cost of production of rooted *Cryptocoryne* species was around Rs.2.00 to 3.00 per plant.