

Executive Summary

Evaluation of Appropriate Micro-propagation Protocol for *Dillenia indica*

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Dillenia indica is an evergreen tree and is generally known as elephant apple or chulta. This tree is considered a useful component for conventional medicine, because extract of leaf, bark as well as fruit have the ability to cure cancer and diarrhea¹. Moreover, the bark of this tree is also employed to produce charcoal².

It is reported that some astonishing properties such as anti HIV, anti-inflammatory, anti-cancer, anti-malarial, analgesic, anti-diabetic, anti-microbial, anti-bacterial, anti-diabetic, anti-oxidant, anti-diarrheal, cytotoxicity and wound healing are also present in this precious species. These specific characteristics are actually the fruit of some useful components including Betulin and betulinic, which are present in *D. indica*³.

Micropropagation is an important technique in which development of tissues depends on the composition of used culture medium⁴ as well as types of suitable growth regulators. In this regard, the MS medium⁵ formulation is the most extensively used culture medium⁶, as it consists of all the nutrients essential for plant growth.

These facts motivated a research team led by Taha *et al.*⁷ to investigate the factors which impact the *in vitro* shooting and rooting behaviors of *Dillenia indica* to achieve an appropriate micro-propagation protocol and to assess the presence of secondary metabolites in the plants. In this study, 3 different types of media were used including MS, WPM as well as B5 by following 3 physical states (Solid, semi-Solid and liquid) of MS medium.

Results showed that the MS medium with 2 mg L⁻¹ of BA in case of *in vitro* propagation was found to be suitable for micropropagation. On the other hand, semi solid MS medium and NAA at 0.6 mg L⁻¹ produced the highest number of roots. This experiment will broaden the horizon for further research to develop an appropriate protocol to propagate *D. indica* effectively.

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