Importance of Genetic Diversity and Phytochemical Assessment of *Madhuca* spp. in Sri Lanka: A Review

W.V.E. Withana, N.S. Hapuarachchi, R. Cooray, Y. Dissanayake, and L. Warnakula

Section of Genetics, Institute for Research and Development, Colombo, Sri Lanka

Madhuca is a large evergreen tree belonging to the family Sapotaceae distributed in many Asian countries including Sri Lanka. The aim of this review was to identify potential applications of *Madhuca* spp.in Sri Lanka to be developed into a research prospective in genetic and phytochemistry analysis. Literature survey was done using "Google Scholar" search engine and "PubMed" database using search terms "Madhuca"," Genetics"," Phytochemistry". Altogether twenty-two research studies were retrieved on phytochemical analysis, pharmacological profiles but fewer in its other utilizations and genetic analysis. Five research articles were found on phytochemistry studies and three articles were about modified DNA isolation methods and genetic diversity analysis using *Madhuca* spp. in India. Studies showed that all parts of the *Madhuca* tree carry a number of medicinal properties and is rich in secondary metabolites. Literature evidence depicted it as a multipurpose forest tree, source of food and nutrition, pharmaceutical ingredient, bio-fertilizer and bio-fuel. This search identified seven *Madhuca* species currently found in Sri Lanka of which four of them are endemic. Being a plant species with a wide scope of potential applications, to date there are only one research available in published literature on phytochemical analysis of four *Madhuca* species found in Sri Lanka. None of supporting materials were found on genetic studies in genus *Madhuca* in Sri Lanka. Hence this raises the demand for such phytochemical analysis of different *Madhuca* spp. in Sri Lanka. Developing methods to extract genetic data, molecular authentication studies via molecular barcoding to fill the gaps in phenotypic and genotypic characterisation, storing the genetic data in databases for public access for future research purposes and efficient sustainable germplasm management will widen the research scope and potential application development of this invaluable plant in Sri Lanka.

Keywords: *Madhuca*, Endemic, Phytochemistry, Molecular genetics