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An effective DNA extraction protocol for *Santalum album* (Sandalwood) of Sri Lanka

U. I. D. Perera* and N. Welikala

Department of Botany, Faculty of Science, University of Kelaniya, Sri Lanka
*imeshadperera@gmail.com

Isolation of genomic DNA is the primary step in studying molecular aspects in any organism. But, this is challenging in medicinal plants due to the presence of higher amounts of polyphenols and secondary metabolites. In this study we modified a CTAB extraction protocol to isolate pure and high yield genomic DNA from Sandalwood (*Santalum album*), which is an important medicinal plant in Sri Lanka. As to best of our knowledge this is the first genetic study on Sandalwood in Sri Lanka. There are number of DNA isolation kits for plant DNA extraction, but they are too expensive and the manual protocols available give poor DNA yields of low quality. The present method is a cheap manual DNA isolation protocol and can be used for isolation of high quality and high yield DNA from young leaves of *Santalum album*. DNA yields and purity were estimated by spectrophotometry, gel electrophoresis and PCR amplification. The CTAB method was modified by varying the concentrations of Polyvinylpyrrolidone (PVP) (1.0%, 2.0%, 3.0%), β-mercaptoethanol (0.2%, 0.4%, 0.6%, 0.8%), NaCl (1.0M, 1.4M, 1.8M), CTAB (1.0%, 2.0%, 3.0%) in the extraction buffer and changing the incubation times. The modified conditions in the CTAB protocol includes; 0.8% β-mercaptoethanol, 3% PVP, 1.0 M NaCl and overnight incubation at -20 ^{0}C after addition of isopropanol. The values of average purity (OD 260/280) (1.72 ± 0.04) and average yield (0.88 ± 0.02 μg/mL) of isolated DNA using this method exceed the values obtained from previously reported methods. The isolated genomic DNA was successfully amplified using ITS1/ITS4 and ITS4/ITS5 primer pairs and produced clear and strong PCR bands with 800 bp in size. Therefore, this method can be used as a tool in molecular studies of Sandalwood.

Keywords: CTAB method, DNA extraction, medicinal plants, sandalwood