Genomic DNA extraction from medicinal plants available in Malaysia using a TriOmicTM improved extraction kit

ABSTRACT

DNA extraction was carried out on 32 medicinal plant samples available in Malaysia using the TriOmicTM extraction kit. Amounts of 0.1 g flowers or young leaves were ground with liquid nitrogen, lysed at 65°C in RY1plus buffer and followed by RNAse treatment. Then, RY2 buffer was added to the samples and mixed completely by vortexing before removal of cell debris by centrifugation. Supernatants were transferred to fresh microcentrifuge tubes and 0.1 volume RY3 buffer was added to each of the transferred supernatant. The mixtures were applied to spin columns followed by a centrifugation step to remove buffers and other residues. Washing step was carried out twice by applying 70% ethanol to the spin columns. Genomic DNA of the samples was recovered by applying 50 µL TE buffer to the membrane of each spin column, followed by a centrifugation step at room temperature. A modification of the TriOmicTM extraction procedure was carried out by adding chloroform:isoamyl alcohol (24:1) steps in the extraction procedure. The genomic DNA extracted from most of the 32 samples showed an increase of total yield when chloroform:isoamyl alcohol (24:1) steps were applied in the TriOmicTM extraction procedure. This preliminary study is very important for molecular studies of medicinal plants available in Malaysia since the DNA extraction can be completed in a shorter period of time (within 1 h) compared to manual extraction, which entails applying phenol, chloroform and ethanol precipitation, and requires 1-2 days to complete.

Keyword: Medicinal plant; Molecular study; DNA extraction; TriOmicTM