

Development of a Protocol to Extract Quality DNA from Maha Aratta (*Alpinia galangal* (L.) Sw.) and Related Species

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Alpinia galangal (L.) of family Zingiberaceae is one of the valuable medicinal plants in traditional medicine. There are some morphologically similar plants for *Alpinia galangal*. Therefore, improper identification creates issues in traditional medicine. DNA barcoding provides correct identification of plants at molecular level. Quality DNA extraction from *Alpinia galangal* and other related species is needed for DNA barcoding. Thus, this research focused on development of a protocol to extract quality DNA from *Alpinia galangal* and five related species. *Alpinia galangal*, *Alpinia calcarata*, *Alpinia malaccensis*, *Hedychium flavescens*, *Hedychium coronarivam* and *Hedychium coccineum* leaf samples were used to extract DNA. Extracted DNA was visualized using 0.8 % agarose gel and quantified using UV visible spectrophotometer. The protocol developed to extract genomic DNA of *Alpinia galangal* and other related species consisted with following steps. In developed promising protocol, the first leaves were sterilized, weighed and kept at -200 °C for one hour, cut in to small pieces, ground with liquid N₂ and transferred in to preheated buffer 2x CTAB with pinch of PVP. β-mercaptoethanol was added. Then chloroform: isoamyl alcohol (24:1) extraction and centrifugation at 13000 rpm were done. After two chloroform: isoamyl alcohol extractions, DNA were left to precipitate at -200 °C for one hour. Then, supernatant was removed and wash buffer was added. Samples were centrifuged at 13000 rpm, and pellets were taken and allowed to dry overnight. Finally, dry pellets were dissolved in TE buffer. This promising protocol confirms that extraction quality DNA is at considerable amount from *Alpinia galangal* and other related species. Pure quality DNA is having absorbance ratio in between 1.8 to 2. It showed that DNA extracted using this developed protocol can be used to extract quality DNA from *Alpinia galangal* and other related species. Concentrations of DNA extracted from six *Alpinia species*, was in range of 150 to 275 ng 1.11⁻¹. It also revealed that this developed protocol can extract considerable amount of DNA from *Alpinia galangal* and other related species.

Keywords: *Alpinia galangal*, Maha aratta, Identification, DNA barcoding, Adulteration