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DNA barcoding of endangered medicinal plant *Cayratia pedata*

T.R. Aswathy[1], E. Gayathri[2], J. Praveen[2], P. Pradeepa[2], Achuthsankar S. Nair[1] and V.S. Sugunan[1]

[1]Department of Computational Biology and Bioinformatics, University of Kerala, INDIA

[2]Department of Bioinformatics, School of Life Science, Bharathidasan University, Thiruchirappalli, INDIA

Presenting author: aswathyravikumartr@gmail.com

Abstract

Acknowledging the effectiveness of plants and their products in the treatment of diseases, the WHO recognizes that medicinal plants play an important role in the low-cost primary healthcare of about 80% of world's population in developing countries including India. Plant and other natural products are gaining popularity as an alternative and system of medicine all over the world. *Cayratia pedata* is an indigenous endangered medicinal herb of south India belonging to the family *Vitaceae*. Traditionally, the leaves of this plant have been used as a dietary ingredient in the treatment of ulcers and diarrhoea. In Ayurveda the extract from *Cayratia pedata* is used to prepare formulations prescribed to treat microbial infections, ulcers, inflammations and arthritis. We have identified this plant to be a good source of phytochemicals like alkaloids, tannins, phenolic compounds, flavonoids and terpenoids. Correct identification of any medicinal plant is an absolute requirement in order to avoid errors in collection of the plants used for the formulations whose effectiveness depends on the natural products contained in them. DNA barcoding is a reliable tool in scientifically identifying medicinal plants. The current study explains how DNA barcode analysis of the plant *Cayratia pedata helps* in the proper identification based on nucleotide diversity of short DNA segments. DNA from the leaves of the plant was extracted and the chloroplast gene rbcL was amplified by PCR and sequenced. The sequence was subjected to a BLAST analysis to compare it with that of other species and a phylogenetic tree was constructed. The results confirmed that the plant belonged to the family *Vitaceae.* DNA bar-code analysis is a powerful technique for the identification, vouching and registration of medicinal plants especially when there is high species diversity. This helps in collecting the precise species that has the maximum yield of the active principles needed by the unskilled user as well as the pharmaceutical industry.

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