

Interspecific Relationships of *Piper* Species in Sri Lanka as Revealed by DNA Barcode ITS

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The genus *Piper* which is the largest genus in the family Piperaceae is economically important as it comprises with valuable crop species as well as several wild species. Although ten species of genus *Piper* are recorded in Sri Lanka, their interspecific relationships were not well studied. Therefore, the aim of this study was to determine interspecific relationships of *Piper* species in Sri Lanka using internal transcribed spacers from nuclear ribosomal DNA (ITS).

Ten varieties of *Piper nigrum* L., two varieties of each *P. betle* L. and *P. longum* L., *P. chuyva* (Miq.) C. DC., *P. siriboa* L., *P. sylvestre* Lam., *P. walkeri* Miq. and *P. zeylanicum* Miq. were used for the study. The genomic DNA was extracted from tender leaf samples using CTAB method, PCR amplified using ITS primer pair and subjected to DNA sequencing. The DNA sequence alignment analysis was carried out and a dendrogram was constructed using the multiple sequence alignment programme MUSCLE.

According to the dendrogram clear formation of two major clusters can be seen and ten *P. nigrum* varieties were clustered together however, variety Kuching has shown a separation from the main cluster. *P. longum*, *P. walkeri*, *P. sylvestre*, *P. siriboa*, *P. betle*, *P. chuyva* and *P. zeylanicum* formed the other cluster in which *P. siriboa* has shared close similarities with *P. betle*, while *P. sylvestre* and *P. walkeri* displayed close relationships and clustered together with *P. longum* varieties. Interspecific relationships between wild species and cultivated species (*P. nigrum*, *P. betle* and *P. longum*) indicated the potential of using the wild species in breeding programs for crop improvement. However, further studies to reveal genetic and phenetic relatedness of those species are needed to deepen the knowledge on interspecific relationships of *Piper* species.

Keywords: *Piper*, DNA barcode, ITS, interspecific relationships

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