Phylogenetic Investigation of Yellow Camellias Based on Electrochemical Voltammetric Fingerprints

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The electrochemical fingerprints of *Camellia huana*, *C. tianeensis*, *C. pubipetala*, *C. chrysantha*, *C. nitidissima*, *C. wumingensis*, *C. quinqueloculosa*, *C. tunghinensis*, *C. euphlebia*, *C. flavida* and *C. multipetala* were recorded using a screen-printed electrode after leaf tissue modification. The electrochemical fingerprints recorded under phosphate buffer solution and acetic acid buffer solution were derived for species identification. In addition, the intraspecific relationships between these *Camellia spp.* were studied based on the recorded electrochemical profiles. The differences in the electrochemically active compounds in the leaf tissue could reflect the differences at the gene level. These results suggest that *C. pubipetala* has a relatively distant relationship with these species. A previous report claimed that *C. tianeensis* was a variant of *C. huana* and supported the integration of *C. tianeensis* into *C. huana*. The close relationship of *C. tianeensis* and *C. huana* was confirmed by the proposed electrochemical method. *C. multipetala* was first considered to have a close relationship with *C. flavida* because they share many similar features. Later, *C. wumingensis* and *C. quinqueloculosa* were also reported to be highly related to *C. flavida*. Our results suggested that *C. flavida* has a distinct relationship with these three species.

Keywords: Intraspecific relationship; *Camellia*; Polyphyly analysis; Phytochemistry; Leaf extract

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