Authentication markers for classification 6 *Lonicera* species analyzing complete chloroplast sequence

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[Introduction]

Lonicera is a genus belonging to the Caprifoliaceae family and many *Lonicera* species are known for medicinal properties. *L. insularis* is an endemic plant that is distributed in Ulleung and Dokdo islands of Korea. *L. insularis* has corolla that changes from white to yellow. Also, flowers have a lot of honey. So, *L. insularis* can be used not only as a honey plant but also as a landscape woody and medicinal plant for the future. Moreover, fruits are edible and young leaves and flowers are used as a substitute for tea. however, there are limited genomic studies about *L. insularis* yet.

[Materials and Methods]

Leaves of 6 *Lonicera* species including *L. insularis*, *L. maackii*, *L. sachalinensis*, *L. praeflorens*, *L. fragrantissima*, *L. japonica* were obtained from Hantaek Botanical Garden in Korea and sequenced through Illumina Miseq platform. Chloroplast genome and nuclear ribosomal DNA sequences of the 6 *Lonicera* species were generated through de novo assembly using low coverage whole genome sequencing (dnaLCW) method.

[Results and Discussions]

The chloroplast genome sequence length of 6 *Lonicera* species ranged from 154,892 bp to 155,318 bp and the 45S rDNA sequence lengths ranged from 5832 bp to 5836 bp. Chloroplast genomes contained 80 protein coding, 28 tRNA and 4 ribosomal RNA genes. Chloroplast sequence comparison revealed that there were a lot of SNPs and InDels ranging from 17 to 2,247 and from 5 to 272, respectively. We performed phylogenetic analysis with 6 *Lonicera* species using SNP and InDel variations. Then, 3 molecular markers were developed to discriminate between 6 *Lonicera* species. As a result, these markers could be suitable tools to distinguish 6 *Lonicera* species. Taken together, this research could be valuable data for further study of *Lonicera* species related to medicinal effect and landscape effect.

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