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Development of DNA-based Species-specific PCR Markers to Distinguish Adulteration with *Scopolia japonica* in the Medicinal Herb *Atractylodes lancea*, and Application for *S. japonica* Detection in *A. lancea* Complex Product

Su Hong Oh[1], Yea Dam Kim[1], Cheol Seong Jang[1]*

[1]Plant Genomics Laboratory, Interdisciplinary Program in Smart Agriculture, Kangwon National University, Chuncheon 24341, Republic of Korea

[Introduction]

Atractylodes lancea rhizomes are commonly consumed as a traditional herb in East Asia. According to the Ministry of Food and Drug Safety reports, Korea, in 2017, adulteration of *A. japonica* with *S. japonica*, which belong to the same genus as *A. lancea*, has been reported; therefore, DNA-based species-specific PCR markers would be required for consumer's safety.

[Materials and Methods]

To detect adulteration with *S. japonica* in *A. lancea* complex products, we developed two PCR-based DNA markers, multiplex and quantitative real-time PCR assay. A total of 14 commercial food products used in this study were purchased from local markets. Genomic DNAs were extracted from commercial foods, using CTAB based DNA extraction method. We used chloroplast genes such as matK and ycf1, and ITS region of nuclear DNA region to develope species-specific primers.

[Results and Discussion]

The efficiency of each primer set ranged 90-110%. A linear correlation (R^2>0.99) was obtained between the crossing point values and log DNA concentration. We determined the Ct value of 10 pg of the target species as the cut-off line and the Ct value of all non-target species amplified later than this cut-off line. Then we evaluated the practicality of the species-specific markers using 14 commercial food products. As a result of the food products test, all the species-specific markers detected only the target species. Therefore, we expect that the species-specific markers in this study will be useful tools to distinguish between *A. lancea* and *S. japonica*.

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*Corresponding author: Tel. +82-70-7135-9637, E-mail. csjang@kangwon.ac.kr