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# Development of Real-time PCR-based Molecular Markers to detect *A. cordata* that can be Mixed and Consumed in Processed *O. elatus* Medicine Products

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**[Introduction]**

The stems of the tree *Oplopanax elatus* and the roots of *Aralia cordata* have been widely used as medicines. According to the National Academy of Forest Sciences in 2019, *O. elatus* is an endangered species worldwide and is being sold at a higher price than *A. cordata*. However, the medicinal name and morphological appearance of *O. elatus* are like *A. cordata*, so there is a possibility that *O. elatus* mixed with impurities *A. cordata* may be sold. Therefore, DNA-based species-specific PCR markers are needed to differentiate these two plants to ensure consumer rights.

**[Materials and Methods]**

DNA-based real-time analysis molecular markers were developed to detect *A. cordata* mixed as an impurity in each *O. elatus* medicinal product. Species-specific primers were developed by selecting chloroplast genes such as *accD, rpoC2*, *atpB*, and *petB*. Ten commercial medicinal products used in the study were purchased from local markets. DNA obtained from commercial food was extracted using a CTAB-based DNA extraction method.

**[Results and Discussion]**

Developed primer sets were evaluated by efficiency and practicality test. 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 compatibility of the designed species-specific markers using 10 commercial medicine products. As a result of the test, all species-specific markers detected only the target species. Therefore, we expect that the real-time PCR analysis of this study will be usefully used to distinguish between *O. elatus* and *A. cordata.*

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