PB-04

Development of DNA-based Species-specific Real-time PCR Markers for Discrimination Between *Artemisia annua* and *Ambrosia artemisiifolia*, and Their Application in Commercial Food Products and Digested Samples by Artificial Gastric Juice

Geum Sol Kim[1], Cheol Seong Jang[1]*

[1]Plant Genomics Laboratory, Department of Applied Plant Sciences, Kangwon National University, Chuncheon 200-713, Republic of Korea

[Introduction]

Some toxic plants are morphologically very similar to edible plants. Accidents of poisoning often occur by confusing wild toxic plants as edible plants. In fact, due to a similar appearance between the two species, 42 patients have occurred in the past five years. *Ambrosia artemisiifolia* is one of the plants with poison. *A. artemisiifolia* is known for the culprit of the ecosystem disturbance, and its pollen causes allergies for human. It is also known that *A. artemisiifolia* causes abdominal pain after ingestion. Therefore, we needed to develop a discrimination method that distinguishes between *A. annua* and *A. aremisiifolia*.

[Materials and Methods]

Both crushed leaves of A. annua and A. artemisiifolia were provided from the Korean Wild Plants Association. A total of 10 commercial food products used in this study were purchased from local markets. 50mg of crushed samples were digested by artificial gastric juice, respectively. Genomic DNAs were extracted from crushed leaves, commercial foods, and digested crushed leaves using CTAB based DNA extraction method. We used chloroplast genes such as ndhA and rpoC1, and used ITS region of nuclear DNA region to developing species-specific primers. **[Results and Discussion]**

The efficiency of each primer set was within 90-110%. A linear correlation (R^2>0.99) were obtained between the crossing point values and long DNA concentration. We determined the Ct value of 10pg of the target species as the cut-off line, and the Ct value of all non-target species amplified lather than this cut-off line. Then we evaluated the practicality of the species-specific markers using 10 commercial *A.annua* food products and digested samples. As a result of the *A.annua* food products test, all the species-specific markers detected only the target species. In the case of digestion by artificial gastric juice test, we digested crushed samples (0h, 1h, 2h, 4h, 6h, and 12h). All the species-specific markers were able to detect target DNA in digested samples at least within 4h. Considering that most foods are digested within 4h in the human stomach, we thought the results were practical enough. Therefore, we expect that the species-specific markers in this study will be useful tools for distinguish between *A. annua* and *A. artemisiifolia*.

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