

## Quality Characteristics and Antioxidant Potential of Seeds of Native Korean Persimmon Genotypes

Il-Doo Kim<sup>1</sup>, Sanjeev Kumar Dhungana<sup>2</sup>, Hye-Ryun Kim<sup>3</sup>, Hyeon-Min Do<sup>2</sup>, Rae-Kyo Jeong<sup>2</sup>, Ji-Hye Mun<sup>2</sup>, Yong-Sung Park<sup>2</sup> and Dong-Hyun Shin<sup>2\*</sup>

<sup>1</sup>International Institute of Agricultural Research & Development, Kyungpook National University, Daegu 41566, Korea

<sup>2</sup>School of Applied Biosciences, Kyungpook National University, Daegu 41566, Korea

<sup>3</sup>Cheonnyeonmiin Co. Ltd., Gyeongju-si 38180, Korea

### [Introduction]

The objective of this study was to investigate the potential of prethanol-A, a food preservative, to be used as an extractant for persimmon seeds. This is the first study to investigate the quality characteristics and antioxidant potential of persimmon seeds of three native Korean cultivars extracted in prethanol-A.

### [Materials and Methods]

Persimmon seeds of three native Korean cultivars, Sanggam Doongsi, Sangju Doongsi and Taechu Dangam (hereafter referred to as SGD-S, SJD-S and TCD-S, respectively) were obtained from Sangju Persimmon Experiment Station (Sangju, Korea). The seeds were collected from the fruits harvested at ready-to-eat maturity stage. Seeds were thoroughly washed with tap water to remove any adhering pulp and kept for drying in hot air drying oven at 50°C for 72 h. Dried seeds were ground into a fine powder using a blender (FM-681C, Hanil, Gwangju, Korea) and kept into airtight plastic bags for storage at 4°C until extraction. Thirty grams of persimmon seed powder was extracted with 300 mL of 80% prethano-A (Duksan Pure Chemicals, Ansan, Korea), an ethanol used in food preservative, using shaking incubator (150 rpm, 25°C) for 24 h and filtered through a filter paper. The residues were also extracted two more times as described above. The filtrates (~ 900 mL) were combined together and dried using a rotary evaporator (40°C) and the dried extracts were stored at 4°C for further analyses.

### [Results and Discussions]

The pH (4.88-4.94) color values, contents of minerals, free amino acids, organic acids and phenolic compounds, and DPPH free radical scavenging potentials of persimmon seed extracts significantly ( $p < 0.05$ ) varied with the genotypes. This study showed that the seeds could be used as a source of different mineral elements (47.14-85.07 mg/kg) without any measurable amount of heavy metals such as arsenic, cadmium, lead and mercury. Similarly, considerable amounts organic (1550.13-2413.08 mg/kg) and essential amino (50.85-54.03 mg/kg) acids and total phenolic compounds (1227.91-1307.78 µg gallic acid equivalent/g) were also found in the seed extracts, indicating their potential food value as a natural antioxidant. Results of the present study imply that prethanol-A, a food preservative, can be used as an effective extractant to obtain the minerals, organic and free amino acids, and phenolic compounds from the persimmon seeds, which possess a big potential to be commercially used in food, cosmetic and pharmaceutical industries.

### [Acknowledgements]

This study was financially supported by the Rural Development Administration, Republic of Korea (PJ011629032017).

\*Corresponding author: Tel. +82-53-950-5707, E-mail. dhshin@knu.ac.kr