PC-003

Anthocyanin Accumulation in a Stepwise Pattern of Purple Waxy Corn (*Zea mays* L.) Kernels during Grain Filling

Gibum Yi[1†], Jung-Tae Kim[1†]*, Ill-Min Chung[2†], Beom-Young Son[1], Young Sam Go[1], Seong-Bum Baek[1], Sun-Lim Kim[1], Jun Young Ha[1], Hwan-Hee Bae[1]*

[1]Department of Central Area Crop Science, National Institute of Crop Science, RDA, Suwon, 16429, Korea
[2]Department of Crop Science, Sanghuh College of Life Science, Konkuk University, Seoul 05029, Korea.

[†]Equally contributed

[Introduction]
Purple corn kernels contain anthocyanins, a group of antioxidants known to be beneficial to human health. This study was carried out to investigate the concentrations of anthocyanins and amino acids and composition of fatty acids in the kernels of purple waxy corn (*Zea mays* L.) during grain filling to determine when the grain nutritional value is at its highest.

[Materials and Methods]
Purple waxy corn 'Heukjinjuchal' kernels were harvested daily from 15 to 31 days after silking. Quantities of anthocyanins, amino acids, fatty acids were analyzed with either HPLC or GC from three biological replicates at each day.

[Results and Discussion]

During grain filling, anthocyanin contents increased as kernel color darkened. Among the anthocyanins measured, cyanidin-3-β-O-glucoside reached the highest contents, 5.71–40.97 mg per 100 g fresh weight in raw kernels and 102.76 mg per 100 g in dry seeds. Pelargonidin-3-β-O-glucoside and malvidin-3-β-O-glucoside became detectable at 21 days after silking; they occurred in the second- and third-highest amounts, respectively, among anthocyanins in the purple corn cultivars tested. The anthocyanin accumulation pattern was strongly associated with physicochemical properties and partly associated with amino acid content. Interestingly, anthocyanin contents increased in a stepwise rather than linear fashion. This study evaluated anthocyanin and amino acid profiles in waxy corn during grain filling and showed that kernels undergo dramatic changes that affect the nutritional value of the fresh corn.

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*Corresponding author: E-mail. miami9@korea.kr (Hwan-Hee Bae)
E-mail. kimjt@korea.kr (Jung-Tae Kim)