

## Quality and Antioxidant Characteristics of Roasted Maize Tea according to Different Cultivation Periods and Variety

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### [Introduction]

Maize (*Zea mays* L.) is the world's third largest food crop after rice and wheat, and contains large amounts of nutrients, unique flavors, and vitamins. Maize has a wide variety of uses, including its use as a raw material for edible and processed food, in animal feed, and in industrial applications.

### [Materials and Methods]

Maize cultivars were grown at the National Institute of Crop Science, RDA, Suwon, South Korea (37°26'N and 126°98' W) during the 2015 cropping season. The cropping season included two growing periods; the first began on 5<sup>th</sup> April (05-Apr) and the second began on 5<sup>th</sup> July (05-Jul). The kernels of the *Zea mays* L. cv. Gangilok, Kwangpyeongok, Dapyeongok, Suwon 184, Sinhwangok, Andaok, Jangdaok, Cheongdaok and Pyeonggangok cultivars are the dent type, while those of the Gangdaok, Daanok, Cheonganok and Pyeonganok cultivars are the semi-flint type, and the Singwangok and Yanganok cultivars are the intermediate type. We evaluated the quality characteristics, phenolic compounds, and radical scavenging activity of roasted maize tea according to different cultivation periods and variety.

### [Results and Discussions]

Proximate compositions of row materials were showed a significantly different according to different cultivation periods and variety, and the quality characteristics of roasted maize tea extracts were significantly different according to different cultivation periods. Total polyphenol, flavonoid contents, and radical scavenging activity of roasted maize tea were showed significant difference before and after roasting. The total polyphenol content of Pyeonggangok cultivar when sown on 5<sup>th</sup> April was increased about 3.6 times before and after roasting by 3.42±0.16 and 12.22±0.67 mg GAE/g, respectively. Overall, the total polyphenol content of roasted maize tea was higher in maize tea produced using maize when sown on 5<sup>th</sup> April. DPPH radical scavenging activity of Gangdaok cultivar when sown on 5<sup>th</sup> April was increased about 31.6 times before and after roasting by 7.61±1.93 and 240.37±8.82 mg TE/g, respectively. ABTS radical scavenging activity of Pyeonggangok cultivar when sown on 5<sup>th</sup> April was increased about 5.5 times before and after roasting by 153.84±1.32 and 843.54±3.64 mg TE/g, respectively. The correlation between the proximate compositions of row materials and quality, and antioxidant characteristics of roasted maize tea showed overall significance.

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