

Change of Quality and Physicochemical Characteristics of Mung-bean Flours with Germination and Roasting Condition

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[Introduction]

The mung-beans are commonly used in cuisines across Asia. Whole cooked mung beans are generally prepared from dried beans by boiling until they are soft. Mung beans are light yellow in colour when their skins are removed. Mung bean paste can be made by dehulling, cooking, and pulverizing the beans to a dry paste. In Korea, skinned mung beans are soaked and ground with some water to make a thick batter. This is used as a basis for the Korean pancakes called Bindae-tteok. The change of quality and physicochemical characteristics of mung-bean flours after germination and roasting treatment were evaluated.

[Materials and Methods]

The mung-bean (*Phaseolus radiatus* L. cv. Sohyun) cultivar was grown at the National Institute of Crop Science, RDA, Suwon, South Korea during the 2016 cropping season. We evaluated the proximate compositions, water binding capacity, water solubility index, swelling power, and chromaticity, phenolic compounds, and radical scavenging activity of roasted mung-bean flours without and with germination.

[Results and Discussions]

The moisture content of the roasted mung-bean flours decreased significantly according to the roasting temperatures and times, and the crude ash, protein and fat contents increased. The lightness of the roasted mung-bean flours significantly decreased, and the redness and yellowness increased. The water binding capacity of the roasted mung-bean flours without and with germination were 151.71 and 192.77% at 240°C for 20 min, respectively. The water solubility index and swelling power decreased with an increase in roasting temperatures and times. The phenolic compounds and radical scavenging activity of the roasted mung-bean flours increased with an increase in the roasting temperatures and times. The total polyphenol contents of the roasted mung-bean flours without and with germination were 4.81~7.71 and 4.22~5.63 mg GAE/g, and the total flavonoid contents were 2.46~3.05 and 2.45~2.87 mg CE/g, respectively. The DPPH radical scavenging activity of the roasted mung-bean flours, without and with germination, were 106.83~376.08 and 174.41~346.70 mg TE/100 g, and the ABTS radical scavenging activity was 251.67~534.31 and 274.39~430.02 mg TE/100 g, respectively. As a result, it is necessary to set quality standards for each application considering the quality and antioxidant properties of the roasted mung-bean flours.

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