

## Quality and Physicochemical Characteristics of Sprout-soybean Cultivar with Different Seeding Periods Cultivated in the North-central Region

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### [Introduction]

Soybeans (*Glycine max* L.) have been an important food source in Asian countries for centuries. In the USA, soybeans are mainly considered as rich protein sources that are usually utilized as ingredients in various food preparations. Soybeans are also well known as a good source of various nutrients. Generally, soybeans consist of protein, fat, soluble carbohydrates such as raffinose and stachyose, and insoluble carbohydrate such as dietary fiber. Soybeans also contain a variety of phytochemicals, such as isoflavones, phenolic acids, phytosterols, and saponins. Soybeans are widely consumed in a variety of products, including soy milk, tofu, soy sauce, and soy oil.

### [Materials and Methods]

The proximate compositions, quality and physicochemical characteristics of sprout-soybean cultivar cultivated in the north-central region of South Korea with different seeding periods were evaluated. We used mung-beans of the cultivars cv. Pungsannamul, Pungwon, Sokang, Somyeongkong, Sojin, Sobaek, Sunam, Joyang 1, Hannamkong, Hoseo and Haewon, and the three different seeding periods were seeded on 30 June, 10 July and 20 July, respectively.

### [Results and Discussions]

The proximate compositions, chromaticity and water characteristics were significantly different among cultivars and different seeding periods. Moisture, crude ash, fat, protein and carbohydrate contents of sprout-soybean cultivar were 5.45~6.49, 5.19~6.24, 15.62~19.06, 33.32~40.53 and 32.46~38.04 g/100 g, respectively. The lightness, redness and yellowness were 57.20~67.01, 0.72~7.56 and 20.43~28.59, and water binding capacity, water solubility index and swelling power were 73.28~149.15, 41.83~55.33 and 26.88~35.90%, respectively. Total polyphenol contents of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> seeding on the sprout-soybean cultivar were 7.75~10.89, 7.26~11.82 and 8.48~11.05 mg GAE/g, total flavonoid contents were 4.44~5.33, 4.43~4.86 and 4.37~4.78 mg CE/g, respectively. DPPH radical scavenging activity was 0.60~2.10, 0.85~1.95 and 0.56~2.18 mg TE/g, and ABTS radical scavenging activity was 6.45~11.24, 6.42~9.15 and 6.14~9.56 mg TE/g, respectively. The phenol compound of Pungsannamul, Somyeongkong and Hoseo cultivars decreased with the delay of seeding periods. Radical scavenging activity of Pungsannamul, Sojin, Hoseo and Haewon cultivars decreased with the delay of seeding periods, but Pungwon, Sokang, Sobaek, Sunam, Joyang 1 and Hannamkong cultivars increased. In the study, phenol compound and radical scavenging activity of sprout-soybean cultivar were different depending on the cultivars and seeding periods.

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