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Confirmation of SSR Markers and QTLs Associated with Seed Size and Water Absorbability in Soybean (*Glycine max*) Cultivars for Fermented Product, *Saengcheonggukjang*

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[Abstract]

Saengcheonggukjang, known as Natto in Japan, is a Korean fermented soybean food that has various bioactive compounds for antioxidant and antidiabetic activity. The development of soybean (*Glycine max* L.) cultivars for *saengcheonggukjang* production relies on the selection of seed traits that influence the quality and sensory properties. One of the important traits for cultivars is seed characteristics such as seed hardness and size. In order to select the lines for breeding good quality *saengcheonggukjang* varieties, several simple sequence repeat (SSR) markers and quantitative trait loci (QTLs) related to seed quality of Korean cultivars, Pungsannamulkong, Socheongja, Pungwon, Heawon, and Hoseo, were analyzed. Based on the many studies to detect stable QTLs for seed traits, we tested several QTLs related to seed size and water absorbability using SSR markers on Korean cultivars. The results showed that two regions for water absorbability of Pungsannamulkong and one region for seed size traits of Haewon and Hoseo were identified in this study. These results could have applications to soybean breeding for seed size and hardness and it is necessary to narrow it down through further study.

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