

Physicochemical characteristics of rice variety for dry-milled flour

Mi-Ra Yoon^{*}, Jieun Kwak, Jeom-Sig Lee, Yong-Jae Won, Mi-Jung Kim, Induck Choi, Yong-Hee Jeon, and Sun Lim Kim

National Institute of Crop Science, Rural Development Administration, Suwon, Gyunggi-do, Republic of Korea

Abstract

Rice (*Oryza sativa* L.) is one of the main agricultural crops in Asian countries, including Korea, and is considered as the most important staple food in the world. Rice is also processed into flour, which is consumed through various foods such as cake, noodle, bread, and confectionary. Rice flour quality is highly dependent on variety and milling conditions. Producing rice flour with fine particles is more difficult than wheat flour because of its grain hardness. The Korean rice varieties representing different amylose contents were selected for this study. The relationship between the morphological and starch characteristics of rice kernels and the appropriate varieties for producing good-quality, dry-milled rice flour were examined. The hardness of the rice kernels was determined by measuring the pressure at the grain breakage point. The damaged starch content of the rice flour was determined using a Megazyme starch damage assay kit. The particle-size distribution of the rice flour was measured as the volume-base distribution using a laser-diffraction particle size analyzer. The mean particle-size distribution of the dry-milled flour obtained was between 65.3 ~ 105.1 μm among the rice varieties. The opaque, non-glutinous, Seolgaeng rice demonstrated a narrow peak at the fine size, whereas the entire particle-distribution range for other varieties was wide. Seolgaeng exhibited significantly lower damaged starch content of dry-milled flour than the other varieties ($p < 0.05$). Seolgaeng showed lowest in energy consumption on rice flour production with 200 mesh particle size. Accordingly, it is possible to produce dry-milled rice flour which is similar to wheat flour that would considerably reduce milling costs.

Keywords: rice variety, dry-milled rice flour

Corresponding author*

Mi-Ra Yoon

Address : 54 Seohoro, Suwon, Gyeonggi-do, Republic of Korea

Tel and Fax : +82-31-695-0606

E-mail: mryoon12@korea.kr