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The Effect of Gelatinized Starch on Baking Bread

[Shigehiro NAITO](#)¹⁾, [Shinji FUKAMI](#)²⁾, [Yasuyuki MIZOKAMI](#)²⁾, [Rieko HIROSE](#)³⁾, [Koji KAWASHIMA](#)⁴⁾, [Hiroyuki TAKANO](#)⁵⁾, [Nobuaki ISHIDA](#)¹⁾, [Mika KOIZUMI](#)¹⁾ and [Hiromi KANO](#)⁶⁾

1) National Food Research Institute

2) Tsukishima Foods Industry Co., Ltd.

3) Tokyo Metropolitan Food Technology Research Center

4) Seitoku University

5) Agriculture, Forestry and Fisheries Technical Information Society

6) Oak-hill Georgic Patch-work Laboratory

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The effects of adding gelatinized starches to a kneading dough (a process known as yukone in Japanese) on the crumb grain of baked white breads were studied using magnetic resonance imaging (MRI) and using scanning electron microscopy (SEM) with and without distilled-water soaking of the samples. MRI revealed that pores became larger and rounder in yukone breads compared to control breads using the sponge dough method, while the number of pores decreased in yukone breads. SEM revealed many starch granules on the surface of pore walls in the control breads, whereas the yukone breads contained starch gels cemented between starch granules. Gluten nets were found to be uniform and oriented in the control breads and became thicker and coarser in the yukone breads. Comparing the SEM images of two commercial white breads made by the yukone method, the fine gluten nets under the starch walls were found to be considerably different.

Keywords: [gelatinized starch](#), [white bread](#), [yukone](#), [MRI](#), [SEM](#), [image analysis](#)

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