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Effects of potato/wheat flours ratio on mixing properties of dough and quality of noodles

Huayin Pu and Junrong Huang

Shaanxi University of Science and Technology, China

The effects of potato flour/wheat flour (PF/WF) ratio on the mixing properties of dough and the quality of noodles were investigated. Substitution of wheat flour with potato flour caused the increases in the water absorption and the protein weakening value (C1-C2) of formulated flours, as well as the decrease in the corresponding dough mixing parameters including dough development time (DDT), dough stable time (DST), initial mixing time (C2), maximum torque during heating (C3), minimum torque of hot paste (C4) and the amount of retrogradation (C5-C4), indicating that the addition of PF weakened dough strength but improved degradation resistance. The textural, cooking, sensory characteristics and microstructure of noodle samples were evaluated. The results indicate that adhesiveness, springiness, broken ratio and cooking lose increased progressively with increasing PF content while the score of sensory evaluation continued to decrease. However, hardness, cooking yield and optimum cooked time for the samples of PF content range from 10%-20% showed a distinctive variation. Combined with the environmental scanning electron microscopy (ESEM) images, as the PF content increased, the gradual structural transformation including continuous gluten-starch network (PF 0%-20%), was observed.

Biography

Huayin Pu was born on May 11, 1986 in Sichuan province, China. He obtained his PhD from South China University of Technology in 2013. At present, he worked in Shaanxi University of Science and Technology. He had her expertise in research on non-chemical modification of starch. In 2015, potato staple food strategy was put forward in China. Potato staple food development became aware of his interest. Noodles are very popular in China, the incorporation of potato flour into wheat flour to prepare noodles can enhance nutritional quality of noodles and lower the allergenicity of wheat gluten. However, the gluten-free properties of potato flour maybe reduce the qualities of dough and end-products. Therefore, his recent effort was in the study of the changes in properties of the formulated dough and noodles with different potato/wheat flours ratio, and the structural transformations induced by the addition of potato flour was successfully revealed.

pu497@163.com

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