

The effects of mixing coarse grains-wheat flour complex on the quality of steamed bread (Mantou) and protein-starch interaction

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Abstract: **【Objective】** Coarse grains contain essential proteins, fiber, minerals and vitamins needed for human growth and health, but the lack of gluten in coarse grains leads to poor processing performance of staple food products. **【Method】** In this study, 30% coarse grain flours (rye, proso millet, buckwheat, and pea) were added to wheat flour to study their effects on flour properties, gluten-starch interactions, and texture characteristics of steamed bread. **【Result】** The results showed that the SH-free content of wheat-grain mixed dough decreased, while the contents of SH-total and S-S between molecules increased. The hardness of coarse grain-wheat mixed steamed bread was higher than that of wheat steamed bread (4.06 N), while the springiness was lower than that of wheat steamed bread (6.5 mm). In addition, the partial replacement of wheat flour by coarse grain flour had little effect on the appearance and texture characteristics of steamed breads. Based on these results, a schematic model was proposed to describe the interaction between proteins and starch in the mixed dough. **【Conclusion】** This study provides a basis for the application of coarse grains in steamed breads (Mantou), and promotes the processing and utilization of coarse grains.

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