Study of Processing Properties Analysis of Different Millet Varieties

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Abstract

Foxtail millet was a kind of annual herb of aboriginal traditional crop belong to Gramineae in Taiwan. In the study we used nine millet varieties bred from our station as materials to analyze their physicochemical properties, pasting properties and functional components for processing, utilization, product research and development as reference. The amount of millet starch from Taitung Sel–1, Taitung Sel–4 and Taitung Sel–6 was good at solubility. Swelling power was more excellent in millet starch of Taitung Sel–2 and Taitung Sel–3. The amylopectin amount of millet starch in Taitung No. 9 was 88%. Amylopectin amount of millet starch in different varieties of Taitung Sel–2 and Taitung Sel–3 was much lower than others. There were main points such as pasting temperature, retrogradation and viscosity affecting product quality during processing of foxtail millets. Pasting characteristics were determined using the Rapid Visco–Analyser (RVA). Peak viscosity was highest in foxtail millet variety of Taitung Sel–4 and lowest in that of Taitung Sel–3. Setback viscosity was highest in millet variety of Taitung Sel–2, and lowest in that of Taitung No. 7. The special characteristic in millet varieties of Taitung No. 8 and Taitung No. 9 were lower pasting temperature which was the most important processing indicator for raw materials. Resistant starch is the indicator in analysis of functional material for millet. Resistant starch amount is highest in millet starch of variety, Taitung Sel–3, which is full of development potential for functional foods and could be used as breeding indicator of new varieties in the future. According to the results of processing properties analysis of all varieties, it could be helpful for research and development to diversify processing and utilization such as functional drinks, snacks, instant food and bakery products.

Keywords: Foxtail millet, Starch, Physicochemical properties, Rapid visco analysis, Resistant starch

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