Effect of Pumpkin Lines and Fruit Processing Techniques on Quality of Pumpkin Flour

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Abstract


One commercial cultivar and six breeding lines of pumpkin (Cucurbita spp.) planted in Taiwan Agricultural Research Institute (TARI), Council of Agriculture were used to study effect of pumpkin lines and manufacturing process on quality of pumpkin flour. Pumpkin flours were prepared from fruits by the hot air-drying technique or the dehumidification drying technique. They were analyzed for flours chemical compositions and physical properties, including color, flour density, water solubility index, and water adsorption index. Results showed that content of reducing sugar was significantly ($P < 0.05$) different among the pumpkin lines/cultivar tested. Quality of pumpkin flour was the best by the hot air-drying treatment at 80°C for 8 hours or the dehumidification drying treatment at 80°C for 4 hours. Color and physical properties of pumpkin flour were affected by pumpkin lines/cultivar but were unaffected by was different drying methods of pumpkin flour. Among the seven pumpkin lines/cultivar tested, the flour quality was best for line no. 23, showing shinny flour color. When the pumpkin flour of line no. 23 was used to substitute wheat flour for making pumpkin bread, the loaf volume and loaf height of the pumpkin bread decreased as the substitution rate of pumpkin flour increased. The texture of bread was influenced by the substitution rate of pumpkin flour and, based on consumer panel sensory evaluations, the best substitution rate of pumpkin flour the was 15%.

Key words: Pumpkin, Cucurbita spp., Pumpkin flour, Hot air drying, Dehumidification drying.