Effect of pre-treatment in producing pumpkin powder using air fryer and its application in 'Bingka' baking

ABSTRACT

Pumpkin powder is one of the main pumpkin products with longer shelf life and it can act as a substitute for pumpkin flesh in different types of formulated foods. This work focused on producing pumpkin powder from different pumpkin parts and evaluating the effects of powder substitution on the physical properties of cake (bingka). Different parts of pumpkin (peeled, unpeeled, and skin) were pre-treated by soaking in limewater solution and then dried in an air fryer at the temperature of 80 °C, 120 min and air flow of 5.11 m/s. The fresh pumpkin (peeled and unpeeled-pumpkin) and pumpkin powder (peeled and unpeeled-pumpkin) were both used in the production of 'bingka' and the baking parameters were optimised. The selected temperatures for baking 'bingka' were in the range of 130–150 °C and the baking time was between 25 and 35 min. Baking temperature and time had a significant effect ($p < 0.05$) on moisture content and hardness, but are insignificant towards chewiness. The 'bingka' baked using peeled pumpkin at optimum baking temperature (130 °C) and time (25 min) had higher moisture content (45.92%) as compared to those baked using unpeeled pumpkin 43.47%, peeled pumpkin powder (44.23%) and unpeeled pumpkin powder (43.47%). It can be concluded that pumpkin powders can be used as a substitute for raw material by considering the moisture content, hardness and chewiness of the products.

Keyword: Pumpkin; Pre-treatment; Pumpkin powder; Air fryer; Optimisation; Baking