

ABSTRACT

Celiac disease is a gluten-related disorder that is triggered when a person consumes gluten. This will cause the immune system to attack the tissue. This problem has caused society to demand more gluten-free foods, including cakes. However, gluten-free cakes have several challenges in that their texture is denser than wheat flour cakes. In this study, gluten-free cakes will be fortified with date palm powder (DPP) to enhance the gluten-free cake properties and add value to low-grade date palm powder. Dates are known for their high fiber and carbohydrate content which can increase the water retention ability of cakes. This ability will result in better texture and structure of gluten-free cakes. However, around 30% of date palm production was discarded due to low qualities in 2021. Therefore, this study aims to determine the effect of date palm powder (DPP) fortification on gluten-free cakes in terms of physical and sensory properties. Five formulations were prepared: control cake (0%DPP), 5% DPP, 10% DPP, 15% DPP, and 20% DPP. The results showed the 20% DPP sample produced the darkest crust color, lightest crumb color, highest volume (153mm), moisture content (26.807), water activity (0.944), and springiness value (0.696) while reducing hardness, adhesiveness, and cohesiveness. A darker yellow color of the cake crust was the result of the Maillard reaction due to the increasing concentration of reducing sugar as the DPP concentration increased. A 9-point hedonic test was conducted to analyze color, aroma, texture, taste, and overall acceptability score. There were no significant differences between control cakes and gluten-free cakes containing DPP in terms of organoleptic properties except color. In addition, just-about-right testing also showed that the control sample was the most favorable in terms of hardness, sweetness, and mouthfeel. Overall, incorporating DPP into gluten-free cakes did not have a major impact on their sensory attributes.

Keywords: Celiac disease; Date palm powder; Gluten-free cake; Physical analysis; Sensory test