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Effect of Prickly Pear Seed Flour and Cladodes on Bread Quality

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Abstract

Bread is the world's most consumed staple food. There is an increasing need to improve bread quality. This study aims at assessing the effects of prickly pear seed flour and cladodes on the physiochemical and phytochemical characteristics of bread. Wheat, Prickly pear seed (PPS) and cladodes flour, composite flour and bread samples were analysed for their functional properties, phytochemical properties, colour, and bread physical properties. Functional properties of PPS and cladodes were higher, ranging from 3.5ml/g to 7.066ml/g respectively. Cladodes and PPS flours showed the lowest foaming capacity and bulk density, ranging from 3.86 to 4.58% and 0.5 to 0.56g/ml respectively. The results for crude fibre shows that PPS has the highest value and wheat flour has the lowest value ranging from 1.13567 to 40.40%. There was an increase in the total phenolic compounds (TFC) of bread compared to wheat flour. However, in terms of colour, there was a decline in L* value when PPS and cladodes flour were added in bread. Moreover, it was found that there was a significant difference between bread sample in the addition of PPS and cladodes flour. Cladodes and prickly pear seed flour from this study were found to increase loaf volume. However, PPS and cladodes have differences in the hardness and gumminess of bread. PPS and cladodes flour improves bread quality. PPS and cladodes flour suggested to be applied in the enhancement of functional properties of wheat flour such as fibre, protein, antioxidants and in increasing bread loaf weight, volume and softness of composite bread.