

EFFECTS OF UNRIPE GREEN BANANA FLOUR ON
THE PHYSICO-CHEMICAL PROPERTIES,
SENSORY CHARACTERISTICS AND
CONSUMERS' ACCEPTABILITY OF
CHINESE STEAMED BREAD

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ABSTRACT

The aim of this study was to partially substitute wheat flour with unripe green banana flour (BF) made from *Musa acuminata x balbisiana* Colla (ABB Groups) cv. *Abu* to study the effects on physical, nutritional, sensory properties as well as consumer acceptability of Chinese steamed bread (CSB). BF was prepared on a laboratory scale and was incorporated into CSB. Four formulations (5% BF, 10%BF, 15% BF and control) were developed. Physical analyses were done on the water activity, pH, specific volume and spread ratio for all the formulations. Proximate analyses were executed to determine the moisture content, total ash content, protein content, crude fat, total dietary fibre and carbohydrate content of the developed CSB. Sensory evaluations were carried out in the form of Quantitative Descriptive Analysis (QDA) and consumer hedonic test. Result showed no significant difference ($p>0.05$) for water activity and specific volume among all the formulations. Meanwhile, substitution with 5%BF significantly increased the spread ratio while 10%BF significantly decreased the pH compared to the control. In proximate analyses, substitution of BF increased in total ash and total dietary fibre content but decreased in moisture, protein and crude fat content. However, the differences were not significant ($p>0.05$) for moisture, crude fat and total ash content. Substitution with 15% BF showed significant decrease ($p<0.05$) in protein content and an obvious increment in total dietary fibre content compared to control. This implies that BF can be a good fibre source. In QDA, no significant differences ($p>0.05$) were reported among all formulations for roughness, hardness, springiness, cohesiveness and sweetness. Meanwhile, 15%BF showed a significant increase ($p<0.05$) in brownness. In hedonic test, no significant differences ($p>0.05$) were reported among all formulations for aroma and flavour. In appearance, texture and overall acceptability, 10% and 15% BF scored significantly lower ratings ($p<0.05$) than control and 5%BF but the scores were still within the acceptable range. Among the three BF-incorporated formulations, 5% BF obtained the highest hedonic scores for appearance, aroma, texture, and overall acceptability and ranked the first in the preference ranking among all the formulations. This study shows that BF can partially substitute wheat flour in CSB up to 15% with increased dietary fibre content and acceptable sensory and physical properties.