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Research article

FUTURE FOODS DEVELOPMENT: EFFECT OF TEMPERATURE, FEED MOISTURE AND COCONUT ADDITION ON THE PHYSICOCHEMICAL PROPERTIES OF EXTRUDED CORN SNACKS

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Abstract

The study investigated the effect of temperature, feed moisture and coconut addition on the physicochemical properties of extruded corn snacks. The samples processed and data collected analyzed using standard methods. The results findings revealed that there were significant variations ($P<0.05$) in the proximate composition of the extruded corn-coconut snack samples. The ash, moisture, fire and fat contents ranged from 3.54-3.82%, 4.94-5.60%, 2.87-3.15% and 8.90-9.15%, respectively. The protein content of the extruded snack samples varied from 9.93 to 12.31%, while the carbohydrate content ranged from 66.36 to 69.40%. Carbohydrate content was highest in FGH (69.40%) and lowest in BCO (66.36%). The moderate fat content can aid in the absorption of fat-soluble vitamins (ADEK). Significant differences ($p<0.05$) were also observed in some of the functional properties of the extruded corn-coconut snacks with the emulsion stability ranging from 10.00 to 11.33%, while emulsion activity ranged from 9.14 to 9.91%. The oil absorption capacity, bulk density and foaming capacity ranged from 1.93-2.98%, 0.57-0.76% and 11.17-15.60%, respectively. Oil absorption capacity varied significantly, with NPO and BCO samples exhibiting the highest values (2.98 g/g), reflecting their potential for flavor retention and mouthfeel enhancement. Bulk density ranged from 0.57 to 0.76 g/cm³, where higher values (e.g., QRW and YXZ) imply denser products, potentially influencing packaging and textural properties. Foaming capacity varied between 11.17% and 15.60%, with NPO demonstrating the most pronounced ability to entrap air, which is crucial for snack lightness and volume. The colour and physical properties of the extruded snacks also varied significantly ($p<0.05$) among the samples. The results of the sensory evaluation revealed that the sample VST was ranked the highest in terms of overall acceptability, while sample SOA was ranked least.