

Proximate, functional and sensory characteristics of blended yellow maize and hard-to-cook cowpea extruded snacks

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Abstract

BACKGROUND

Cowpea is a rich source of low-cost protein, but it remains underutilised due to the development of the hard-to-cook phenomenon. However, milling hard-to-cook (HTC) seeds has shown potential for their utilisation in developing food products. Also, yellow maize is a relatively underutilised grain that is rich in nutrients, including vitamin A. Extrusion cooking of blends including yellow maize and HTC cowpea in snack formulations has the potential to improve their utilisation. Therefore, the objective of the study was to formulate a nutritious acceptable extruded snack using a combination of HTC cowpea and yellow maize flours.

RESULTS

The results showed that addition of HTC cowpea flour increased ash (0.56–1.47%), fibre (3.56–5.31%) and protein content (10.20–12.38%) for flour blends. While carbohydrate (2.39–1.57%) and moisture content (10.33–9.74%) decreased. Blended formulations had lower fat content (4.17–4.41%) than yellow maize (4.80%). Furthermore, addition of HTC cowpea increased water (21.18–30.07%) and oil absorption capacities (14.12–22.03%) for flour blends. While expansion ratio (2.39–1.57%) of snacks decreased. The formulation with 15% HTC cowpea and 85% yellow maize flour had higher sensory ratings for overall acceptability (6.98).

CONCLUSION

HTC cowpea addition in yellow maize flour improved the proximate and functional properties. Also, blending of yellow maize-based snacks with HTC cowpea improves consumer acceptability. Yellow maize and HTC cowpea flour blends have potential for industrial utilisation and can be useful in food formulations. © 2024 Society of Chemical Industry.

Keywords: extrusion, sensory, expansion ratio, water absorption capacity, oil absorption capacity