

**Proximate composition, functional and *in vitro* antioxidant properties of breakfast cereal made from oat flour enriched with cocoa powder**

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**Abstract**

This study aimed at determining the proximate composition, functional and *in vitro* antioxidant properties of the breakfast cereal prepared from oat flour enriched with cocoa powder. The formulated blends were obtained from the combination of oat flour and cocoa powder viz: OCP1, OCP2, OCP3, OCP4 and OCP5 (100:0, 95:5, 90:10, 85:15 and 80:20%; oat flour:cocoa powder), respectively. The proximate composition result revealed higher protein (11.10-16.45%), moisture (2.15-2.22%), fat (5.17-6.13%) and ash (2.04-3.13%) but lower carbohydrate (76.87-70.93%) and fibre (2.63-2.05%) for samples enriched with cocoa powder. The water absorption capacity and bulk densities of the enriched breakfast cereal (~80%) increased with increase in the amount (5-20%) of cocoa powder added to the blend while the oil absorption capacity (~70%) and swelling capacity decreased with increase in level of enrichment (5-20%). The increase in the quantity of cocoa powder added to breakfast cereal resulted in an increased diphenyl-1-picrylhydrazyl (DPPH):  $IC_{50}$ ; 90-180 mg/ml), the 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonate) radical cation (ABTS<sup>•+</sup>): ( $IC_{50}$ ; 1.34-4.33 mg/ml) scavenging activities and enhanced ferric reducing power (10-55%). Therefore, the addition of cocoa powder to breakfast cereal improved the nutritional and antioxidant properties of the breakfast cereal that could be explored in the management of oxidative stress-related metabolic disorders.

**Keywords:** oat, cocoa, proximate, swelling power, antioxidant, oxidative stress

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