

## Quality Assessment Of Instant Breakfast Cereals From Yellow Maize (*Zea mays*), Sesame (*Sesamum indicum*), And Mushroom (*Pleurotus ostreatus*) Flour Blends

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**Abstract :** Composite flours were processed from blends of yellow maize (*Zea mays*), sesame seed (*Sesamum indicum*) and oyster mushroom (*Pleurotus ostreatus*) powder in the ratio of 80:20:0; 75:20:5; 70:20:10; 65:20:10 and 60:20:20, respectively to produce the breakfast cereal coded as YSB, SMB, TMB, PMB and OMB with YSB as the control. The breakfast cereals were produced by hydration and toasting of yellow maize and sesame to 160°C for 25 minutes and blended together with oven dried and packaged oyster mushroom. The developed products (flours and breakfast cereals) were analyzed for proximate composition, vitamins, minerals, anti-nutrients, phytochemicals, functional, microbial and sensory properties. Results for the flours showed: proximate composition (%): moisture (2.59-7.27), ash (1.29-7.57), crude fat (0.98-14.91), fibre (1.03-16.02), protein (10.13-35.29), carbohydrate (75.48-38.18) and energy (295.18-410.75kcal). Vitamins ranged as: vitamin A (0.14-9.03 ug/100g), vitamin B1 (0.14-0.38), vitamin B2 (0.07-0.15), vitamin B3(0.89-4.88) and Vitamin C (0.03-4.24). Minerals (mg/100g) were reported thus: calcium (8.01-372.02), potassium (1.40-1.85), magnesium (12.09-13.15), iron (1.23-5.25) and zinc (0.85-2.20). The results for anti-nutrients and phytochemical ranged from: tannin (1.50-1.61mg/g), Phytate (0.40-0.71mg/g), Oxalate(1.81-2.02mg/g), Flavonoid (0.21-1.27%) and phenolic (1.12-2.01%). Functional properties showed: bulk density (0.51-0.77g/ml), water absorption capacity (266.0-301.5%), swelling capacity (136.0-354.0%), least Gelation (0.55-1.45g/g) and reconstitution index (35.20-69.60%). The total viable count ranged from  $6.4 \times 10^2$  to  $1.0 \times 10^3$  cfu/g while the total mold count was from  $1.0 \times 10^0$  to  $3.0 \times 10^0$  cfu/g. For the breakfast cereals, proximate composition (%) ranged thus: moisture (4.07-7.08), ash (3.09-2.28), crude fat(16.04-12.83), crude fibre(4.30-8.22), protein(16.14-22.54), carbohydrate(56.34-47.04) and energy (434.34-393.83Kcal). Vitamin A (7.99-5.98 ug/100g), vitamin B1(0.08-0.42mg/100g), vitamin B2(0.06-0.15 mg/100g), vitamin B3(1.91-4.52 mg/100g) and Vitamin C(3.55-3.32 mg/100g) were reported while Minerals (mg/100g) were: calcium (75.31-58.02), potassium (0.65-4.01), magnesium(12.25-12.62), iron (1.21-4.15) and zinc (0.40-1.32). The anti-nutrients and phytochemical revealed the range (mg/g) as: tannin (1.12-1.21), phytate (0.69-0.53), oxalate (1.21-0.43), flavonoid (0.23-1.22%) and phenolic (0.23-1.23%). The bulk density (0.77-0.63g/ml), water absorption capacity (156.5-126.0%), swelling capacity (309.5-249.5%), least gelation (1.10-0.75g/g) and reconstitution index (49.95-39.95%) were recorded. From the total viable count, it ranged from  $3.3 \times 10^2$  to  $4.2 \times 10^2$  cfu/g but no mold growth was detected. Sensory scores revealed that the breakfast cereals were acceptable to the panelist with oyster mushroom supplementation up to 10%.

**Keywords :** oyster mushroom (*Pleurotus ostreatus*), sesame seed (*Sesamum indicum*), yellow maize (*Zea mays*), instant breakfast cereals

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