FUNCTIONAL PROPRETIES OF FLOUR SAMPLES PRODUCED FROM BLENDS OF SOLD –STATE FERMENTED SESAME SEEDS, AFRICAN YAM BEAN AND MORINGA LEAF POWDER FOR SNACKS PRODUCTION

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Introduction

A snack is a desirable, delicate, tender highly sweetened, non-yeasted baked product [1]. Snacks food, such as biscuits are amongst popularly consumed items eaten by people, especially children in Nigeria. They are prominent ready to –eat backed snacks amongst people globally [2]. Amongst all the oil seed protein, sesame protein is the most nutritious, as it is a rich source of methionine (Sulphur containing Amino Acid) and tryptophan [3]. African Yam bean and Moringa are examples of underutilized crops that have great potentials and varied uses. *Moringa oleifera* is a very simple and readily available leafy vegetable that can be used as a supplement to address micro-nutrient deficiencies.

Materials and Methods

The Sesame seeds, African yam bean (AYB) and Moringa were procured from Ogige Market in Nsukka, Enugu State, Nigeria. The sesame seeds were cleaned, soaked, fermented, roasted, milled, defatted and milled again with Cyclotec – 1093 grinder and passed through 500um sieve. They were packed under vacuum and stored at 40^0C for analysis. Ten kilogram (10 Kg) of the African yam bean were sorted, washed, sundried for 48 h and toasted on a traditional clay pot at 125^0C for 40 min. Moringa leaves were washed, sundried and milled (Moringa Leaves Powder, MLP). Blending of sesame seeds flour; AYB flour and MLP was done in the ratios (100:0: 0, 0:100.0, 95:5:0, 90:5:5, 85:15:0, 80:15:5, 75: 25.0, 70:25:5, 65:35:0 60:35:5, 55:45:0, 50:45:5). The functional properties of the flour were determined according to the methods of the AOAC [4] while sensory evaluation was carried out using descriptive analysis and affective testing [5]. Data obtained were analyzed using one-way analysis of variance and means were separated using Duncan's multiple range test. Significance level was accepted at $p< 0.05$.

Results and Discussion

Table 1 shows the results of the functional properties for the flour. Sample $LMDTM_1$ has the highest bulk density of 0.711(g/cm^3) while sample $LMDTM_5$ has the lowest bulk density of 0.61010 (g/cm^3).

Table 1: Functional properties of flour

Flour Samples	Bulk Density (g/cm^3)	WAC (%)	OAC (%)	Solubility (%)	Swelling power (%)	FC (%)	Emulsifi (%)
$LMDTM_1$	0.711	165.52	94.50	13.40	3.50	8.0	46.2
$LMDTM_2$	0.643	152.29	84.56	12.30	4.85	0	47.2
$LMDTM_3$	0.618	169.11	88.34	11.20	4.63	0	47.6
$LMDTM_4$	0.611	164.33	86.14	11.60	4.96	0	47.4
$LMDTM_5$	0.610	167.66	81.30	8.90	5.06	0	48.9
$LMDTM_6$	0.624	159.71	75.82	9.20	5.02	0	48.2
$LMDTM_7$	0.639	158.67	73.90	10.00	4.82	0	51.4
$LMDTM_8$	0.639	142.22	73.29	9.40	4.81	0	51.0

The results are presented as mean $\pm$ standard deviation of triplicate observations.

References

1. Okaka, J. C (2005), Processing of starchy roots, tubers and fruits. In: Handling, storage and Processing of Plant Foods. Academic Publishers, Enugu, Nig pp 30-60.
2. Adeola, A. A. and Ohizua, E. R (2018). Physical, Chemical and sensory properties of biscuit prepared from flour blends of unripe cooking banana, pigeon pea, and sweet potato. Food science Nutrition 6,5: 532-540.
3. Manikantan, M. R, Sharma, R.Yadar, D.al, & Guptu R. (2015). Selection of process parameters for producing high quality defatted sesame seeds flout at pilot scale. Journal of Nutrition, 88(5), 287-292
4. AOAC (2010). Official Methods of Analysis, Association of Official Analytical Chemist Washington DC, 18th ed.
5. Stone and Sidel, J.I., (2004). Sensory Evaluat ion Practice (2nd Ed.) California: Acad Press.