

MICRONUTRIENTS AND ANTIOXIDANT ACTIVITIES OF WHOLE WHEAT SUBSTITUTED WITH DEFATTED SESAME SEEDS FLOUR FUNCTIONAL PASTA

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Defatted sesame seeds flour are a by-product of sesame seeds oil extraction with exceptional nutritional values such as high dietary fiber, certain micronutrients, and significant antioxidant activities. However, it is underexploited in food applications as it is mostly discarded or used as feed for animals. In view of the fact that pasta has become a staple food especially in developing countries such as Nigeria, it is opined that inclusion of defatted sesame seeds flour into wheat for the production of pasta could reduce waste, improve nutritional status by alleviating micronutrient deficiency and providing a functional food with health-promoting effects for the populace, thus the drive of the study. Sesame (*Sesamum indicum L.*) was dehulled, blanched (90⁰C, 5 minutes), drained, dried for 72 h, milled to obtain

a full fat sesame seeds flour. The oil was extracted using n-hexane (1 liter : 500 g) and the solvent was completely evaporated after extraction, milled and sieved (250 μm) to obtain the flour. Pasta was produced by extrusion from whole wheat flour enhanced with defatted sesame seeds flour at 0, 5, 10, 15 and 20 % flour blends. Micronutrients (potassium, sodium, phosphorus, zinc, iron, magnesium, calcium, vitamin B1, B2, B9 and E), lipid peroxidation, 2,2, Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activities and Ferric reducing antioxidant power (FRAP) assay were analyzed using standard methods. This study revealed that pasta substituted with defatted sesame seeds flours can provide 10-20 % daily recommended value for vitamins and 25-50 % for minerals. High ferric reducing power and lower value of lipid peroxidase and DPPH activities indicates ability to scavenge and neutralize free radicals, therefore reduced damage by oxidative stress. The consumption of pasta substituted with defatted sesame seeds can be considered a dietary diversification of nutritional advantage and immense health benefits considering its free radical scavenging potentials.