

**ANTIOXIDANT RETENTION IN SOLAR-DRIED MUSHROOMS AND
ACCEPTABILITY OF MUSHROOM MILLET PORRIDGE BLEND AMONG
HIV PATIENTS IN NAKURU COUNTY REFERRAL HOSPITAL, KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree or an award in any other university.

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ABSTRACT

The role of mushrooms in preventing and treating illness and promoting quality of life has gained increased awareness especially due to their high antioxidant content. Antioxidants are necessary for body protection against oxidative stress especially among people with lowered immune system, such as People Living with HIV/AIDS (PLWHAs). There are limited options of nutritional therapeutic foods available for use by PLWHAs. Millet is an underutilized indigenous crop in Kenya whose nutrient profile can be improved through blending with other foods. The purpose of this study was to establish the antioxidant (Vitamin E, Vitamin C, β -carotene and Total Phenolic Content) concentration and retention in fresh and solar-dried oyster mushrooms (*Pleurotus ostreatus*) and assess the acceptability of finger millet (*Eleusine Coracana*) porridge enriched with oyster mushroom among PLWHAs. The study adopted an experimental design with fresh mushrooms and pure millet flour as the control samples and mushroom enriched millet flour as the experimental samples. Fresh mushrooms were purchased in Juja sub-county, Kenya, transported using cool boxes and refrigerated at 4°C in the Kenyatta University food chemistry laboratory. Millet samples were purchased from markets within Nairobi County, Kenya and transported and stored in hermetic bags. β -carotene and Total Phenolic Content of mushrooms and millet were analyzed using UV-VIS spectrophotometry at 450nm and 765nm respectively. Vitamin C and Vitamin E content were analyzed using reverse-phase high Pressure liquid chromatography (HPLC). Sensory acceptability of mushroom-millet porridge was determined using a 5-point hedonic scale questionnaire administered to 30 randomly selected participants (PLWHAs) from Nakuru County Referral Hospital. Independent T-tests and Analysis of Variance (ANOVA) were used to analyze nutrient content and sensory scores. The antioxidant nutrient content of fresh and solar dried mushrooms were: β -carotene- 13.73 ± 0.02 mg/100g dw, 1.21 ± 0.00 mg/100g dw ; Vitamin E- 23.23 ± 2.12 mg/100g dw, 0.96 ± 1.18 mg/100g dw; Vitamin C 37.25 ± 0.32 mg/100g dw, 5.60 ± 0.12 mg/100g dw and TPC 36.48 ± 1.50 mg/100g dw, 21.55 ± 0.24 mg/100g dw respectively. Blanching the mushrooms before solar drying increased the retention rate of the nutrient antioxidants in the solar dried mushrooms. There was a significant difference in the antioxidant content of fresh mushroom and solar dried mushrooms in all the tested nutrients ($p \leq 0.05$). Enriching millet flour with mushroom powder significantly increased β -carotene, Vitamin C and TPC concentrations ($p \leq 0.05$). There were significant differences between control porridge and mushroom enriched millet porridges on all sensory attributes apart from color ($p \leq 0.05$). The unblanched mushroom: millet porridge (60:40) blend was rated the poorest (2.97 ± 1.47) in all the sensory attributes. This study's findings demonstrate that oyster mushrooms are rich in antioxidants. However, solar drying the mushrooms without blanching significantly lowers the levels of the antioxidants. This study established that porridge made from millet flour enriched with mushroom is rich in β -carotene, Vitamin C and TPC; and is acceptable among PLWHAs. The consumption of porridge made from millet-mushroom blended flour should be promoted among PLWHAs not only because of protein content but also because of antioxidant content. Findings from this study are relevant to nutritionists, farmers, and policy makers as it shows the potential of mushrooms in enhancing diets, promoting health and income generation.