# Comparison of Nutritional and Some Biochemical Properties of Locally Grown Four Mushroom Species

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Although mushrooms are consumed preferably as a delicacy, little knowledge is existing on the nutritional and biochemical properties of locally grown four mushroom species; Button (*Agaricus bisporus)*, Oyster (*Pleurotus ostreatus)*, MK-white (*Calocybe sp.*), and Ganoderma (*Ganoderma lucidum)*. Mushroom samples were collected from the Regional Agriculture Research and Development Center, Makandura. This study investigated the proximate composition, antioxidant activity (AA), total phenol content (TPC) and, total flavonoid content (TFC), and antidiabetic properties of mushrooms by previously described methods. Proximate composition was determined by Association of Official Agricultural Chemists (AOAC) method and AA was measured by 2,2-diphenyl-1-picrylhydrazyl (DPPH), Ferric Reducing Antioxidant Power Assay (FRAP), and 2,2′-Azinobis- (3-Ethylbenzothiazoline-6-Sulfonic Acid Assay (ABTS) methods. TPC and TFC were measured by Folic Ciocalteau and Aluminium chloride colorimetric method, respectively. Antidiabetic properties of mushroom were analysed against α-amylase and α-glucosidase enzyme inhibitory activities. Crude content of all four mushroom were taken for three different solvents (water, 65% ethanol and 80% ethanol) for biochemical assays. According to the results, proximate composition was in the following ranges of; moisture (73.78-92.66%), carbohydrate (1.13-23.75%), protein (0.69-5.36%), fat (0.21-1.15%), and ash (0.74-1.50%). The highest protein content was observed in Button mushrooms while the highest fat and carbohydrate contents were in Ganoderma. Water extract and 65% ethanolic extract of oyster mushroom had the highest TPC (3.95±0.05 mg GAE/g DW) and TFC (2.17±0.06 mg CE/g DW), respectively. Ethanolic extract of oyster and water extract of button mushroom showed the highest AA measured by FRAP (53177±634 µmol $Fe^{2+}$Eq/g DW) and ABTS (422.48±7.56 µmol TE/g DW), respectively. Ethanol extracts of Ganoderma showed highest AA ($IC_{50}$ = 283.1±70.3 µg/ml) measured by DPPH, and highest α-amylase ($IC_{50}$=77.51±6.80 µg/ml) and α-glucosidase ($IC_{50}$=0.4113± 0.08 µg/ml) inhibitory activities. According to results button and oyster mushrooms are comparatively rich in both proteins and antioxidants and Ganoderma has a potential for antioxidative and antidiabetic therapeutic uses.

**Keywords:** Mushrooms, Proximate composition, Antioxidant, Antidiabetic