East Africa Food Energy Water Conference

Looking Into the Future

NUTRITIONAL CONTENT OF WILD EDIBLE MUSHROOMS

In comparison to Cultivated Species

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Background

Nutritional Content of Edible Wild Mushroom

- Mushrooms is an integral part of world traditional diets, valued for their rich nutritional profile and potential health benefits.
- In Tanzania, wild edible mushrooms hold cultural and nutritioal significance, traditionally consumed by several tribes, especially during the rainy season.
- However, the consumption is low and seasonal, and the nutritional composition of most wild mushroom varieties remains largely undocumented,
- While Practical identification knowledge is passed down orally.

Background

As a result, there is;

- Limited potential in utilizing EWM mushroo
address micronutrient deficiencies and food
- Inconsistent classification, cases of poisonir
nutrient loss due to improper processing
- Therefore, this study aims to analyze the nu
composition of selected wild and cultivated
mushrooms, assess the impact of drying on
properties, and document their scientific
classification.

Study Area

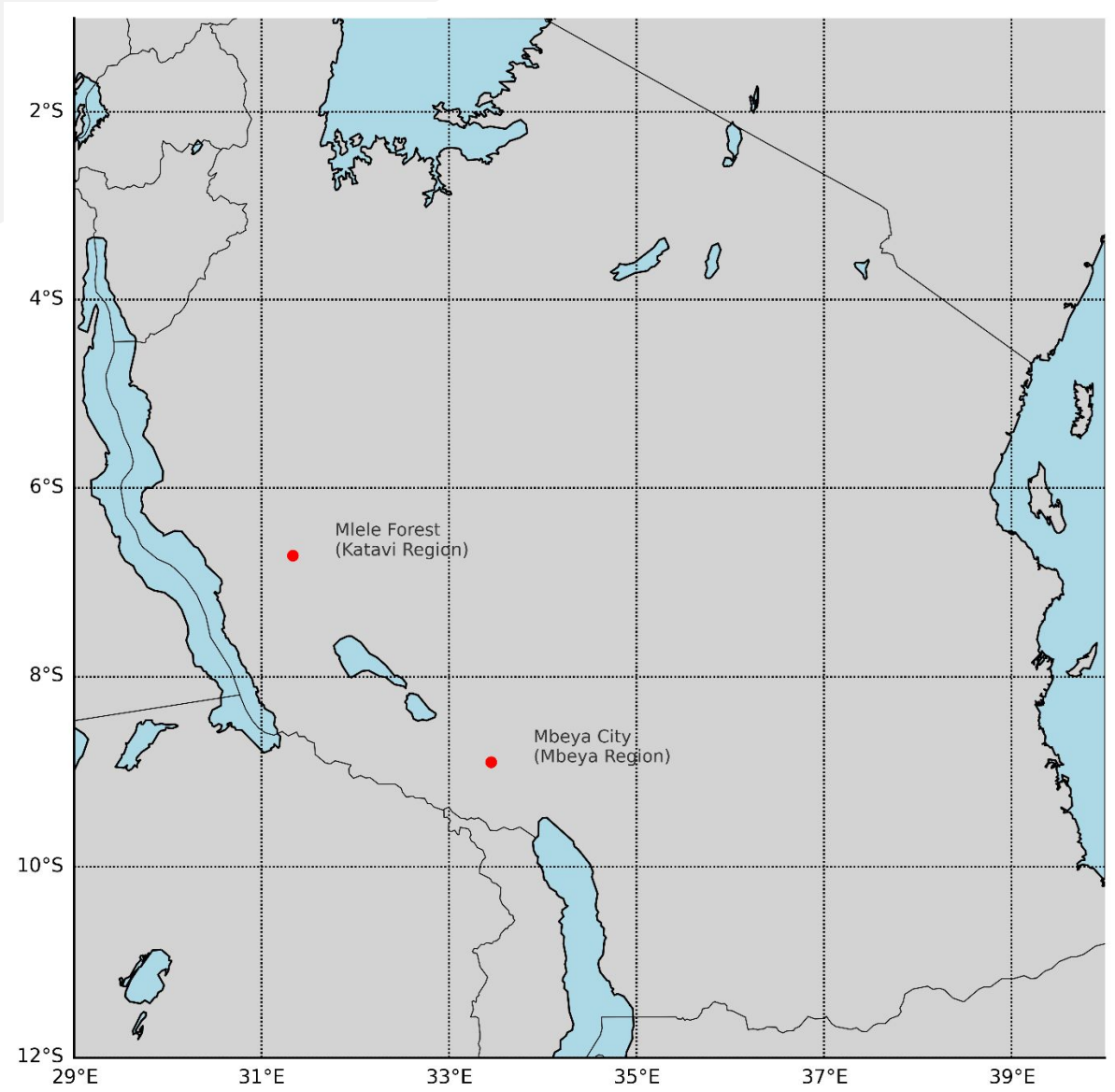
This study was conducted in two regions of Tanzania: Katavi and Mbeya.

Wild mushroom samples were collected from Mlele Forest, Inyonga District, Katavi Region.

Over 56 edible wild mushroom species.

Cultivated mushroom samples were sourced from urban mushroom farmers in Mbeya City, Southern Highlands of Tanzania.

Mbeya has a bimodal rainfall pattern and moderate temperatures, supporting year-round oyster mushroom cultivation (*Pleurotus ostreatus)*.



DOCUMENTANTION

WILD EDIBLE MUSHROOM

WANGE NJANO

UKIKOVA

UMPALALA

DOCUMENTANTION

WANGE NYEKUNDU

ULELEMA

DOCUMENTANTION

Cultivated Mushroom

HKP UYOLE

WHITE OYSTER

Study Focus

Nutritional composition of EWM Vs Cultivated Mushroom

- Comprehensive analyses of nutritional composition of wild edible mushroom in comparison to commonly cultivated varieties in Tanzania, will place EWM in a stronger position as a valuable, nutrient-dense food source, supporting dietary diversification, food security, and potential market opportunities.
  - Five edible wild mushroom
  - Two cultivated mushroom species

Nutritional Content of Fresh Vs Dried Mushroom

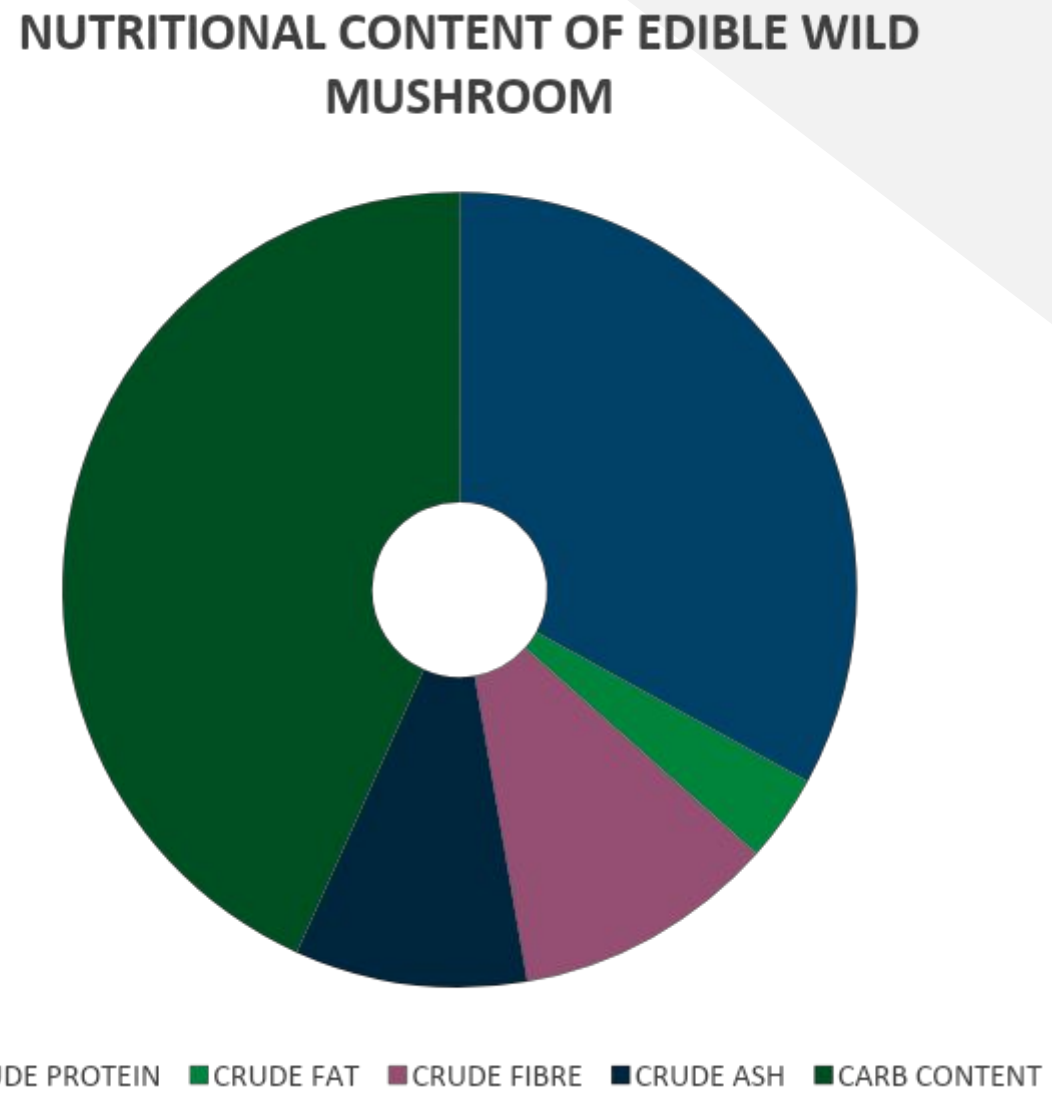
- Preservation techniques, particularly drying, play a crucial role in ensuring off-season availability, but drying methods can impact the nutritional content of mushrooms.
  - Solar dried
  - Controlled laboratory Food dried

Nutritional Content of Wild Edible Mushroom

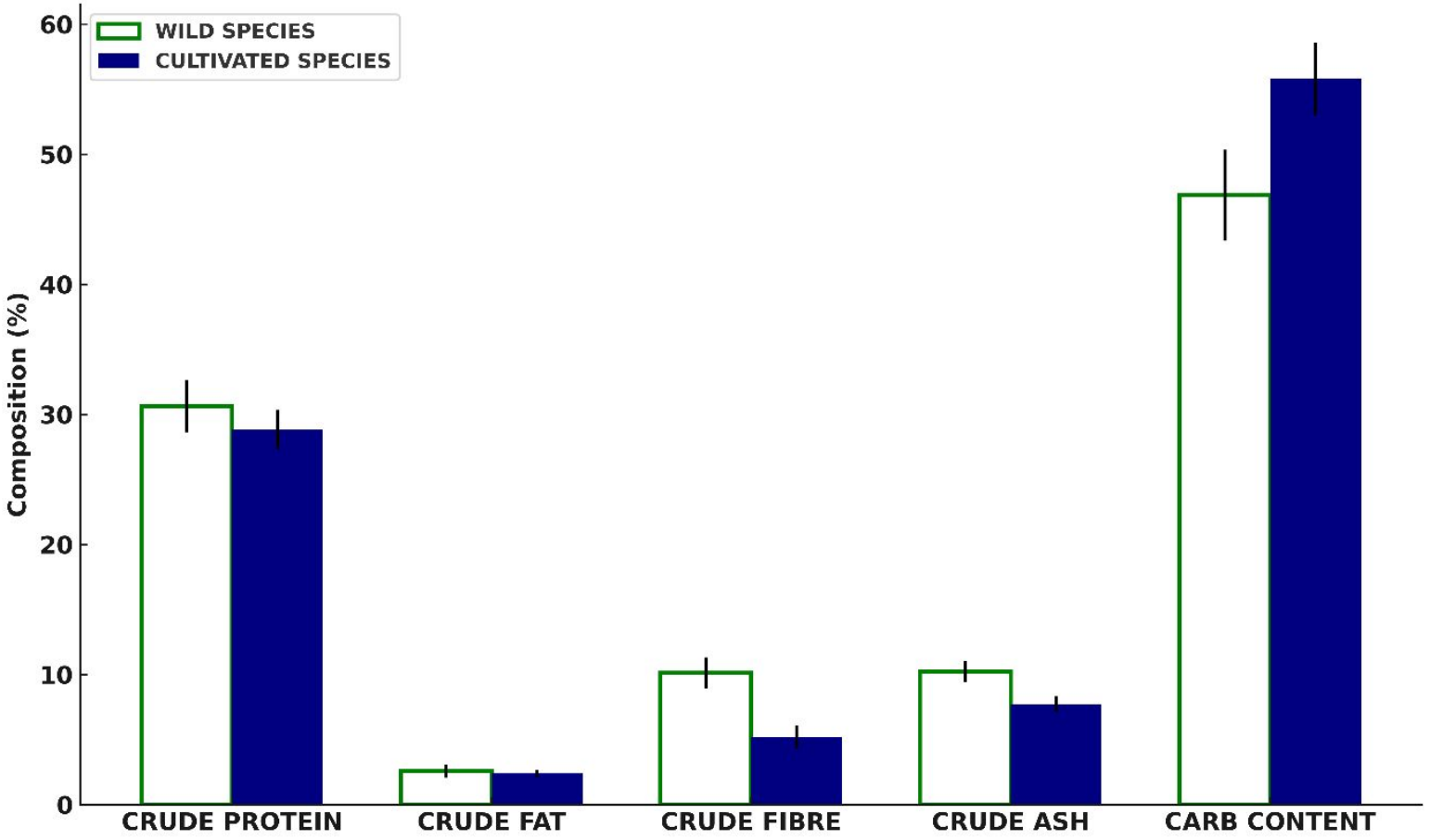
The nutritional composition of wild edible mushroom was studied

- Carbohydrate Content
- Protein Content
- Fat Content
- Fibre Content
- Ash Content

Wild Mushroom provides an excellent source of nutrients, contribute to numerous health benefits, making them a valuable addition to a balanced diet

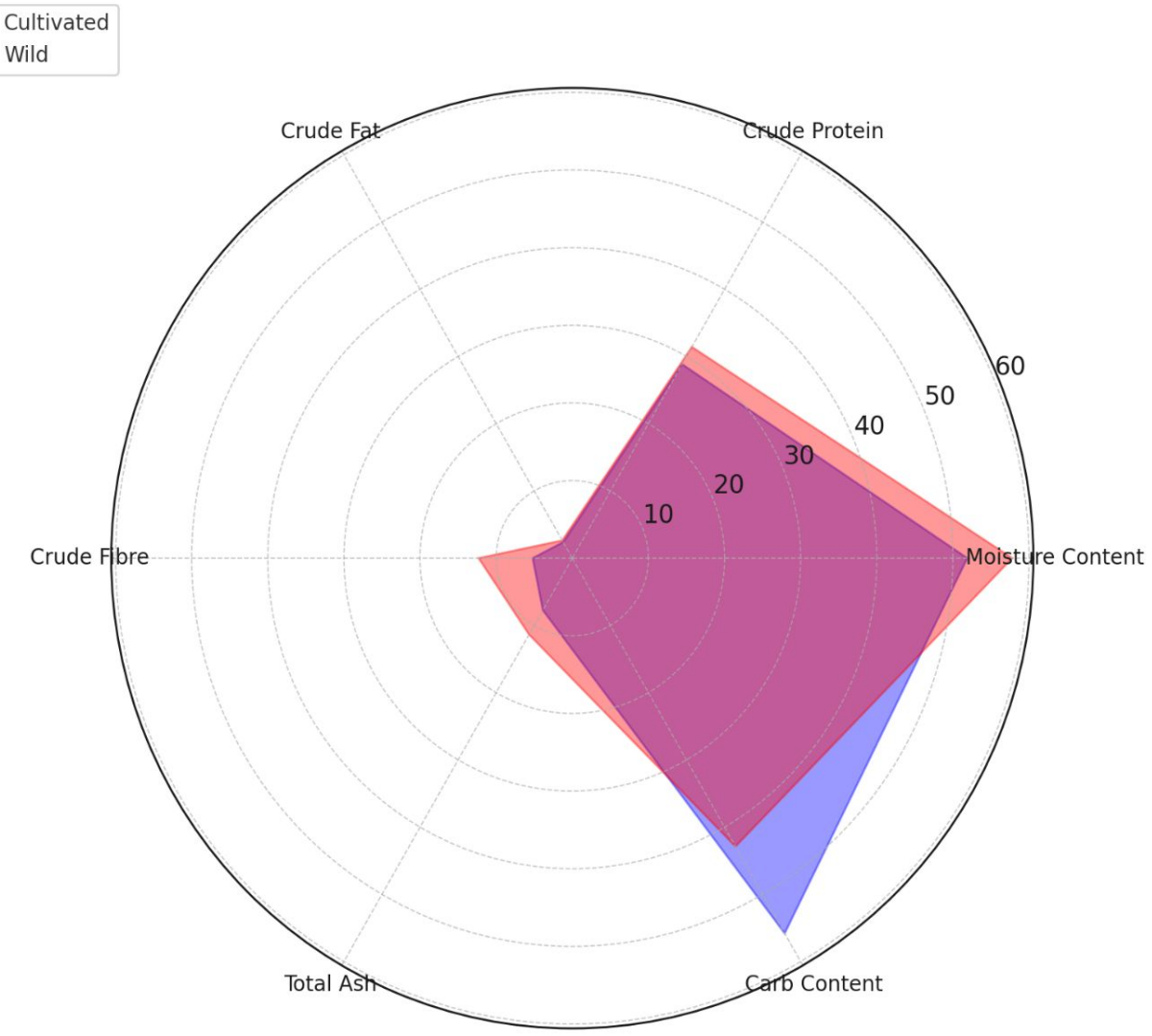


Comparative nutritional analysis of edible wild and cultivated mushroom species



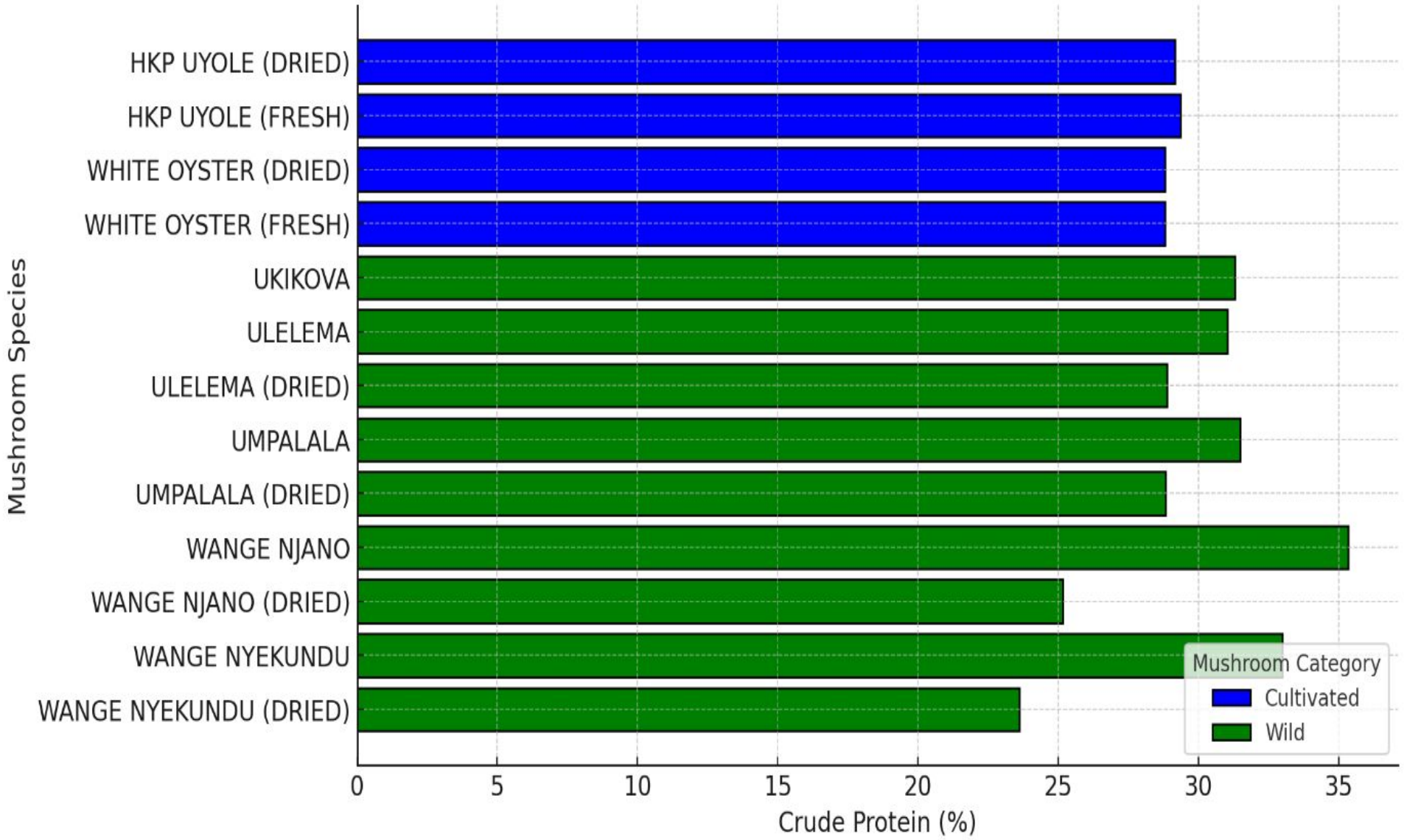
- **Fat Content:** 1.51% to 3.55% Vs 1.64% to 2.14%, P=0.694.
- **Crude Fibre Content**: 10.71% to 17.64% Vs 5.7% to 5.93%, P=0.0035.

Comparative nutritional analysis of edible wild and cultivated mushroom species



- **Total Ash Content (Minerals)**:8.9% to 14.1% Vs 7% to 8.31%) (P=0.0035)
- **Carbohydrate Content**:55.81% Vs 42.88%) (P=0.00053)

PROTEIN CONTENT



HIGH NUTRITIONAL DIET

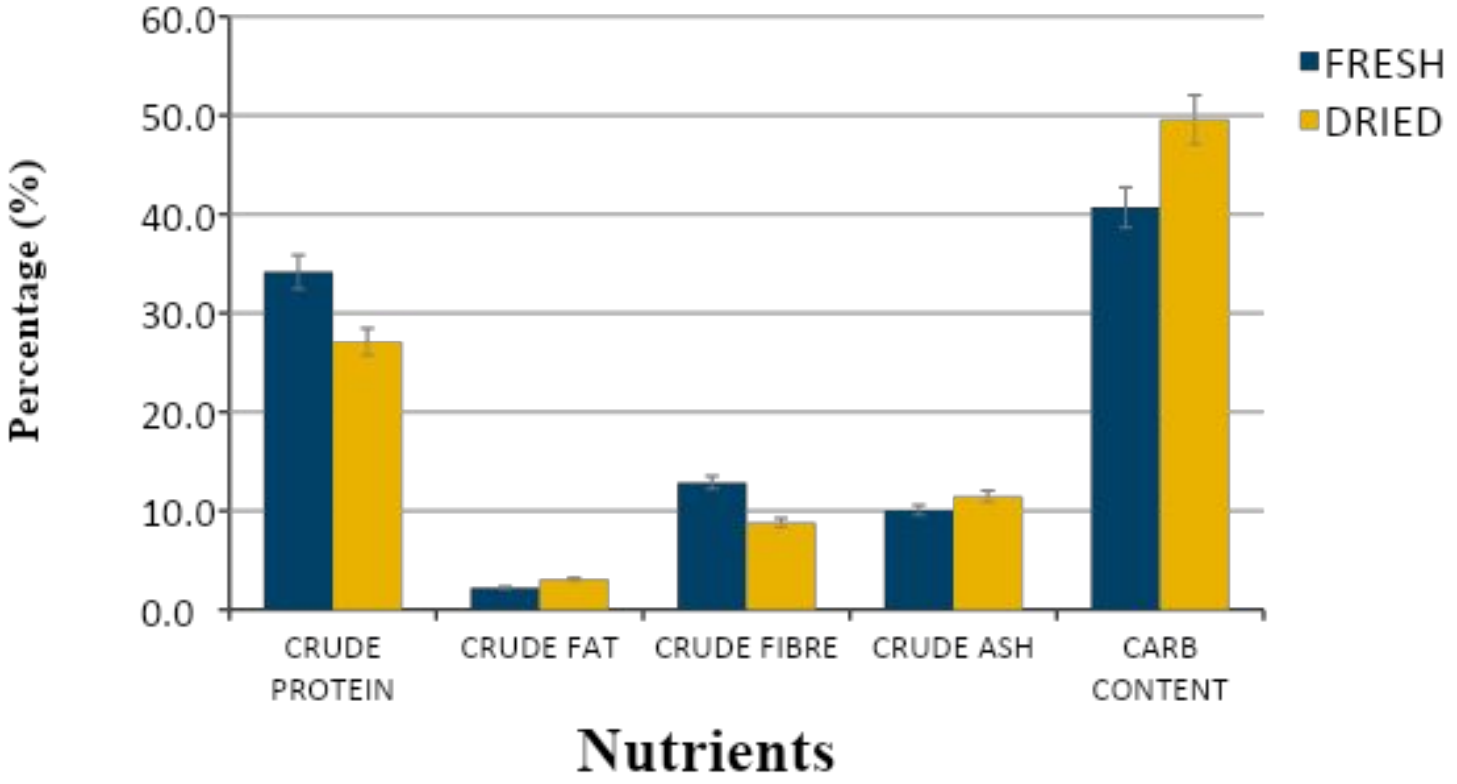
Impact of Mushroom Processing on Nutritional Quality

Drying as a Preservation Method:

- Widely used in Tanzania to ensure off-season availability.
- Sun drying is the most common method; storage is done in plastic bags or clay pot

- **Moisture Content Changes**:
- Fresh mushrooms: 88.20%–91.55% moisture content.
- Dried mushrooms: 11.83%–15.70% moisture content.
- High moisture in fresh mushrooms affects perishability, texture, aroma, and weight.
- Low moisture in dried mushrooms enhances stability, microbial safety, and long-term storage.

Nutritional content comparison between fresh and dried mushroom species



Effect of Drying on Mushroom Nutritional Quality

Protein Content Reduction

Fresh mushrooms: 38.60% – 31.30%

Dried mushrooms: 29.16% – 23.62%

Statistically significant difference (P=0.0049, d=1.973).

Reduction due to heat exposure, enzymatic activity, and oxidative reactions

Impact of Mushroom Processing on Nutritional Quality

- **No Significant Changes in Other Nutrients**
- Fat content: Fresh (2.16%) vs. Dried (3.04%) (P=0.0654)
- Crude fiber: Fresh (16.40% – 7.00%) vs. Dried (12.12% – 4.65%)
- Total minerals: Fresh (9.72%) vs. Dried (10.86%) (P=0.2154)
- Carbohydrates: Fresh (43.35%) vs. Dried (50.94%)

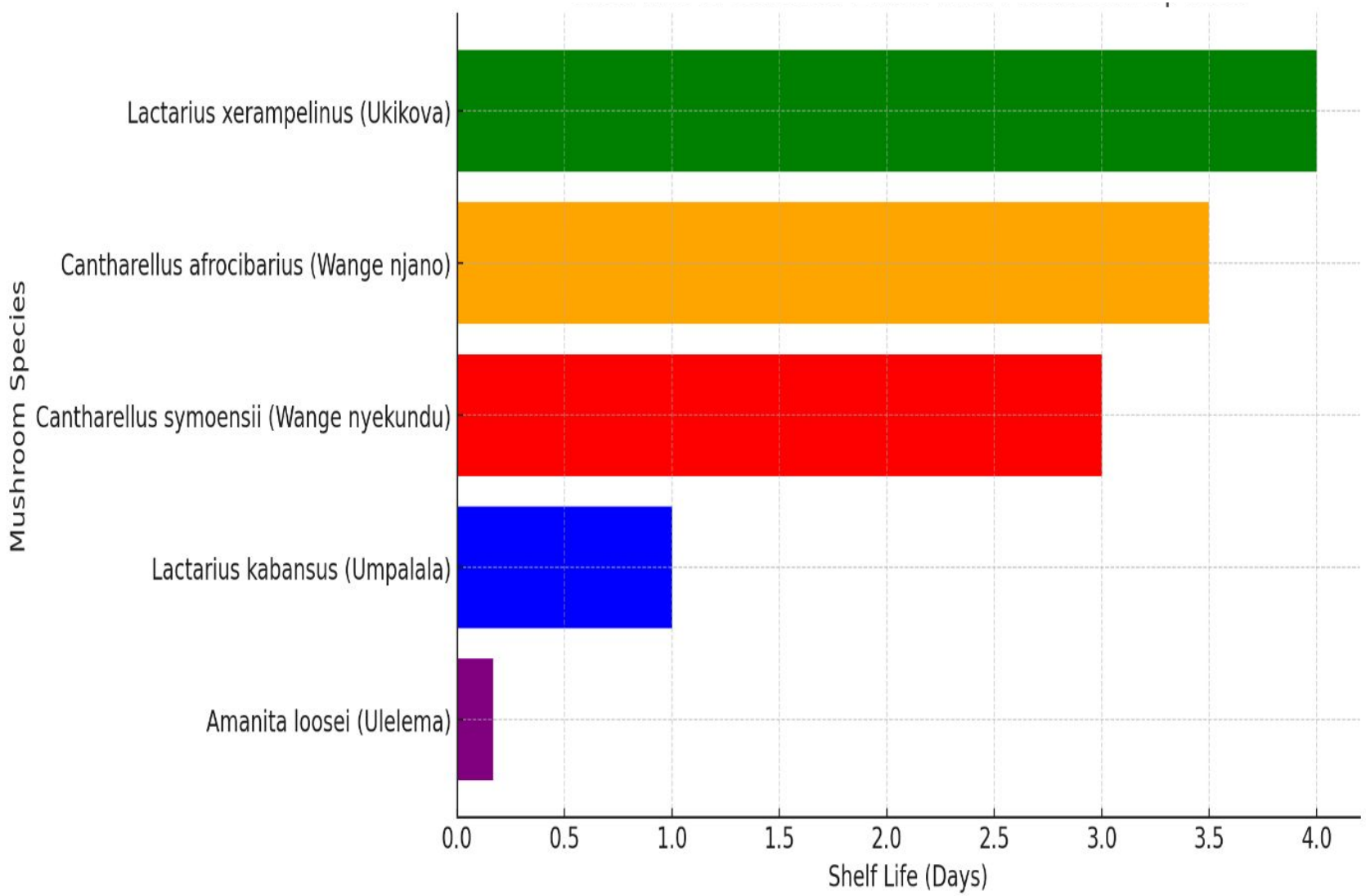
Impact of Mushroom Processing on Nutritional Quality

Drying Methods & Efficiency:

- Solar drying: Used for wild mushrooms, took 48 hours, resulted in 11.83%–22.53% moisture content.
- Food air drying (40°C for 24 hours): Used for cultivated mushrooms, resulted in 13.7%–15.7% moisture content.
- No significant difference in final moisture levels between solar and food air drying (P=0.54), proving solar drying can be effective

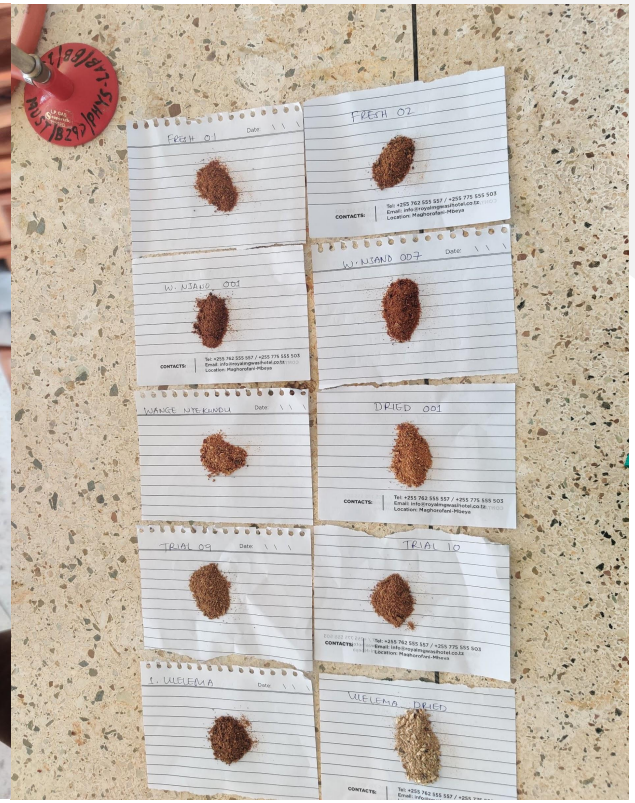
- **Conclusion**
- Drying does not significantly alter most nutrients.
- Protein reduction is notable but still retains good nutritional value.
- Drying ensures year-round availability, enhances food security, and supports trade

SHELF-LIFE STUDY OF EWM



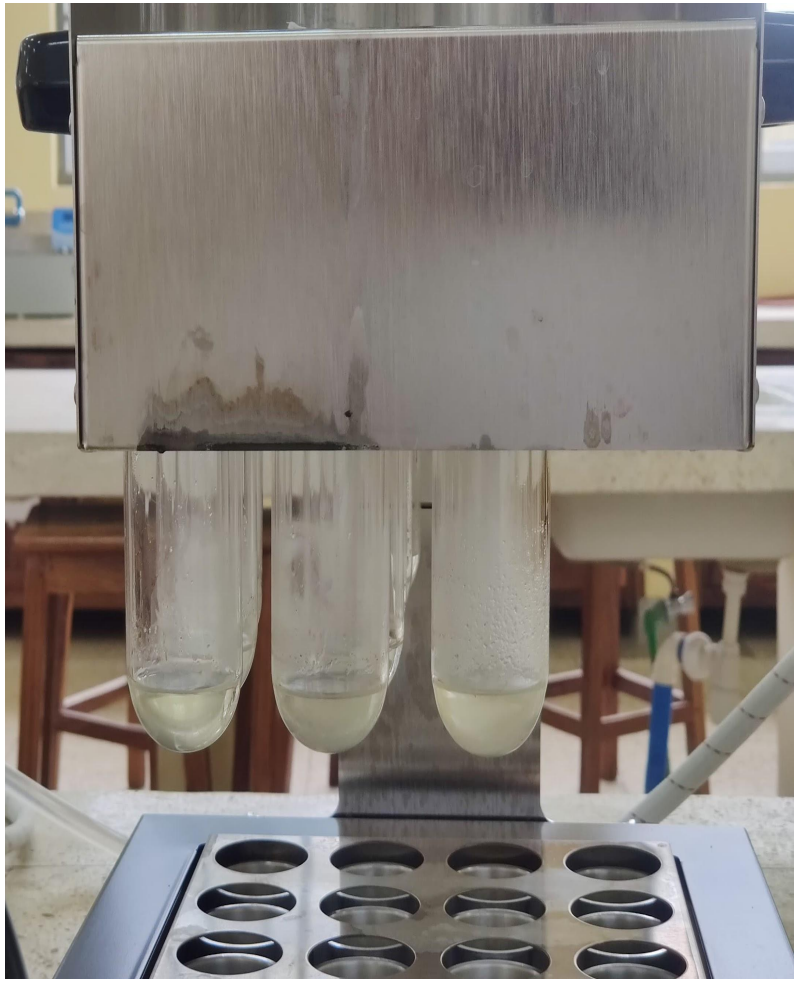
PICTURES

SAMPLE PREPARATION



PICTURES

Analysis of Moisture Content



Analysis of Protein content

Analysis of Fat Content

Thank You.

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