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JOSEPH AYO BABALOLA UNIVERSITY
IKEJI - ARAKEJI
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JABU 2025

THEME:
THE FUTURE OF WELLNESS:
Functional Foods, Nutraceuticals and Phytomedicines as Key Drivers

VENUE:
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PROGRAMME & BOOK OF ABSTRACTS

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Developed beverage from Roselle -Tiger nut blend inhibits critical enzymes associated with hypertension in Wistar rats

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ABSTRACT

When the force of blood on the artery walls is continuously too great, it is referred to as hypertension, or high blood pressure. It happens when blood pressure measurements are greater than what is considered normal, which is typically 120/80 mm Hg (World Health Organization, 2024). Beverages and dietary

Developed beverage from Roselle -Tiger nut blend inhibits critical enzymes associated with hypertension in Wistar rats

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Abstract

Background and objectives: When the force of blood on the artery walls is continuously too great, it is referred to as hypertension, or high blood pressure. It happens when blood pressure measurements are greater than what is considered normal, which is typically 120/80 mm Hg (World Health Organization, 2024). Beverages and dietary interventions are critical vehicles used to supply essential nutrients (both macro and micronutrients) and bioactive compounds needed by the body for optimum function and survival (Obode et al., 2024). This study developed and characterized a novel beverage from a blend of *Hibiscus sabdariffa* (Roselle) and *Cyperus esculentus* (Tiger nut) and evaluated its inhibitory effects on critical enzymes associated with hypertension using albino Wistar rats.

Methods: The beverage formulation was optimized based on physicochemical properties, phytochemical content, and sensory evaluation. Twenty-five albino Wistar rats were grouped into five groups representing normal control (G1), negative control (G2), positive control (G3), treatment groups G4(2mg/ml) and G5(4mg/ml); were used for this study. Hypertension was induced using cyclosporine and enzyme inhibition assays were conducted to assess the impact

of the developed beverage on angiotensin-converting enzyme (ACE) and oxidative stress (Agunloye et al., 2019).

Results: Results show that the negative control group had a mean ACE concentration of 5.20±0.25 µmol/min/mg protein compared with that of the normal control (2.28±0.17 µmol/min/mg protein). Treatment with the developed product reduced the expression of ACE to 1.93±0.26 and 1.73±0.40 µmol/min/mg protein for 2mg/ml and 4mg/ml respectively. This observed effect is significantly comparable to that of the positive control of 2.37mmHg (standard drug). Lipid peroxidation was significantly reduced from 11.74±0.83 to 6.85±0.74mmol MDA/mg protein following treatment with 2mg/ml of the developed product. This observed effect could be attributed to the presence of polyphenol, flavonoid, arginine and oleic acid content of the developed product.

Conclusion: These findings suggest that this functional beverage holds promise as a natural antihypertensive agent and could serve as a complementary dietary approach for managing hypertension. Further studies, including detailed phytochemical profile, micronutrient composition, and clinical validation, are warranted to document its therapeutic potential.

References:

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