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NIGERIAN SOCIETY OF BIOCHEMISTRY AND MOLECULAR BIOLOGY (NSBMB)

Department of Biochemistry
Usmanu Danfodiyo University, Sokoto

Book of Abstracts

38TH

Scientific Conference &
Annual General Meeting

NSBMB Sokoto 2021

THEME

Biochemistry and Molecular Biology: Tools for Innovation, Entrepreneurship and Sustainable Development

Venue: University Auditorium, Main Campus, Usmanu Danfodiyo University, Sokoto

Date: Sunday 6th - Thursday 10th June, 2021

ND030

Effect of Cooking Method and the Nutritional Quality of Some Rice (Oryza Sativa) Varieties Consumed in Minna, Niger State, Nigeria

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ABSTRACT
Rice is a staple food for over half of the world's population. The nutritional value derived from rice consumption is based on a number of factors including how the rice is prepared. This study assessed the effects of two commonly used cooking methods (with and without parboiling) on the nutritional composition of nine milled rice samples consumed in Minna, Niger state (three samples each of Nigerian local, Nigerian bagged and foreign rice). The different rice samples were cooked using the two methods and proximate compositions were evaluated according to the method of the Association of Official Analytical Chemists (AOAC) and compared. The results showed significant reduction ($P < 0.05$) in the percentages of ash, fat, fiber and protein contents of all rice samples using both cooking methods compared to the raw samples. The parboiling method however resulted in significantly more reduction in these nutrient contents compared to the samples cooked without parboiling. The percentages carbohydrate contents were significantly higher ($P < 0.05$) in both cooking methods for all rice samples compared to the raw samples. The significantly higher ($P < 0.05$) loss of nutrient by parboiling methods compared to without parboiling observed in this study suggest that rice is nutritionally better cooked without parboiling.

Keywords: Rice, Cooking, Nutrient, Parboiling

ND031

Nutritional Composition, Phytochemical and Heavy Metals Content of *Allium cepa* (Onion) and *Allium sativum* (Garlic) sold in Wudil Market, Kano State, Nigeria

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ABSTRACT
Farming methods and climate change alter the accumulation and concentration of phytochemistry. This study was aimed at determining the phytochemical, proximate composition, and anti-nutritional factors present in *Allium cepa* L. (onion) and Allium sativum (garlic) sold in Wudil market in Kano state using standard laboratory procedures and heavy metals using Atomic absorption Spectroscopy (AAS). The qualitative and quantitative phytochemicals in *Allium capa* revealed the presence of alkaloids (6.45mg/kg), tannins (1.25mg/kg), flavonoids (1.51mg/kg), total phenolic (20.68mg/kg) while saponin was absent. On the other hand *Allium sativum* shows alkaloids (4.68mg/kg), tannin (0.25mg/kg) and saponin (0.44mg/kg). Proximate composition of garlic show significant ($p<0.05$) difference in fat (2.82%), carbohydrate (24.55%), fibre (2.74%), and ash (4.22%) when compared with onion, while protein (2.96%) and moisture (87.36%) are significant ($p<0.005$) in onion. Anti-nutritional factors present in onion show significant ($p<0.05$) in oxalate(11.85mg/kg) and tannins (0.76mg/kg), while garlic shows significant ($p<0.05$) in phytate (1.79mg/kg) and hydrogen cyanide (0.39mg/kg). Heavy metals in onion show significant ($p<0.05$) in Cd, Cu, Fe, Pb, and Mn, while garlic only show significant ($p<0.05$) in Zn and Co. The Cr in onion shows non-significant ($p>0.05$) when compared with garlic. Cd, Pb, Mn and Co in onion and garlic are above WHO recommended safe limits in Vegetables. It could be concluded from this study that agro-climatic condition may have effect on the phytochemicals of both plants samples from Wudil when compared with others, while sources of the heavy metals need to be investigated and controlled from level of cultivation to that of processing.

Keywords: Phytochemicals, Heavy metals, *Allium cepa, Allium sativum, Wudil market.*