AMINO ACID PROFILE OF RAW AND BOILED SEEDS OF AFRICAN WALNUT (PLUKENETIA CONOPHORUM MUELL ARG.) FROM SOUTH-EASTERN NIGERIA

Udeonyia1, O. A; *Baiyeri1, K. P., F. U. Ugese2 and Aba1, S. C.
1Dept. of Crop Science, University of Nigeria, Nsukka, Enugu State, Nigeria.
2Dept. of Crop Production, University of Agriculture, Makurdi, Benue State, Nigeria
*Author for correspondence: paul.baiyeri@unn.edu.ng

ABSTRACT
Seeds of African Walnut (Plukenetia conophorum Muell Arg.) obtained from four (4) states – Enugu, Anambra, Abia, Rivers – in south-eastern Nigeria were assayed for amino acid contents of the raw and cooked seeds using High Performance Liquid Chromatography (HPLC). Results indicated significant (p ≤ 0.05) variation in both essential and non-essential amino acid content across locations. Among the essential amino acids, the accession from Abia had the highest arginine and lysine content; Rivers had the highest concentration of histidine and valine, while Enugu showed the highest methionine and threonine content, though statistically similar with that of Abia. Boiling significantly (p < 0.05) increased the amount of tryptophan, but all the other essential amino acids did not respond significantly to boiling. Among the non-essential amino acids, alanine, asparagine, glutamine, glutamic acid and glycine responded significantly to location. Boiling reduced the quantities of cysteine and glutamic acid; but increased those of glutamine and lysine. Among the essential amino acids, only histidine and lysine were significantly (p < 0.05) influenced by interaction effects of location and processing such that boiling drastically reduced the levels of histidine in the seeds from Anambra and Rivers but enhanced the level of histidine in the seeds from Abia. Boiling also increased the amount of lysine in the Anambra seeds but reduced the lysine level in all the other accessions. In the case of the non-essential amino acids, asparagine, glutamine and glutamic acid responded significantly (p < 0.05) to interactive effect of the two factors. Principal Component Analysis (PCA) explained close to 50% of the total variability in amino acid composition, identifying arginine, asparagine, lysine, methionine, valine, glutamic acid, leucine, cysteine, threonine, alanine and isoleucine as the key amino acids for describing African walnut seeds in the south-eastern zone of Nigeria. It was clear from the study that seeds of this under-utilized forest species have full complement of the amino acids in sufficient amounts to meet the amino acid requirements of its teeming consumers.

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