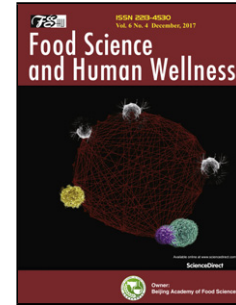


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PROTEIN QUALITY OF FOUR INDIGENOUS EDIBLE INSECT SPECIES IN NIGERIA

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ABSTRACT

Food security is a serious concern particularly for developing countries. To overcome hunger and malnutrition there is a need for increased research towards finding alternative and cheaper sources of nutrients. Insects have been reported to be rich in protein and could be alternative sources of protein. This work was therefore designed to determine the protein quality of moth caterpillar, termite, cricket and grasshopper and the effects of diets supplemented with these insects on some biochemical and haematological indices of rats. The amino acid compositions of the insects were determined using standard analytical methods. Five iso-nitrogenous and isocaloric diets were formulated on a 10% protein basis with the insects and casein. A Nitrogen free diet was also formulated as control. Thirty six (36) young weanling albino rats (21 – 28 days old) were divided into 6 groups and fed with the diets *ad libitum* for 28 days. Their weekly weight gain and daily feed intake were recorded, urine and faeces were collected for nitrogen determination using Kjeldahl method and the data obtained used to calculate the various protein quality indices. After the feeding trial periods, the rats were sacrificed, blood samples collected and organs excised for various analyses. Cricket was found to have the highest amino acid score (0.91), protein efficiency ratio (1.78), net protein ratio (3.04) biological value (93.02%) and protein digestibility corrected for amino acid score (0.73) as compared to other insect proteins analysed. The organ body weight ratios of the liver, spleen, lung and heart of rats placed on the insect supplemented diets were not significantly different ($p > 0.05$) from those fed with casein and basal diets. Serum total protein concentrations in rats fed with cricket diet were not significantly different ($p > 0.05$) from those fed casein diet while serum LDL cholesterol concentration was lowest in rats fed cricket diet. The finding in this work that the selected insects are nutritious and safe for consumption may alleviate the fear of entomophagy thereby reducing the overdependence on conventional animal proteins.

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