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Nutritional Characterisation of Traditional Preserved Cowpea Leaves Consumed in Coastal Drylands of Kenya

JOSHUA OWADE¹, GEORGE ABONG¹, MICHAEL OKOTH¹, AGNES MWANG'OMBE²

¹*University of Nairobi, Dept. of Food Science, Nutrition and Technology, Kenya*

²*University of Nairobi, Dept. of Plant Science and Crop Protection, Kenya*

Abstract

Consumption of African leafy vegetables such as cowpea leaves is high among communities in the arid and semi-arid lands in sub-Saharan Africa. However, seasonal availability of these vegetables has often limited their utilisation. Consequently, some households often resort to the traditional preserved forms of the vegetables to enhance their availability. It is not sufficient to be dismissive of these techniques as less efficient ways of enhancing nutrient intake among communities, thus the current study sought to characterise the nutritional quality of the traditional preserved forms of cowpea leaves consumed and utilised in the arid and semi-arid lands of the coastal region of Kenya. Twenty samples of the preserved forms of cowpea leaves were obtained from farmer groups in Taita Taveta County. Similar forms of preserved leaves from the same group were mixed and homogenized; twelve samples were then subjected to nutritional analysis. The blanched cowpea leaves had significantly ($p < 0.05$) lower crude protein and ash contents than the fresh and unblanched shadow-dried and sundried leaves. The unblanched shadow-dried leaves had significantly ($p < 0.05$) the lowest crude fat content, $0.2 \pm 0.0\%$. Traditional preservation techniques induced a change of between between 88% and 98% in beta-carotene content. The unblanched shadow-dried leaves had higher beta-carotene content (2.60 ± 0.21 mg/100 g) than both the blanched and unblanched sundried leaves, 0.54 ± 0.03 and 0.40 ± 0.10 mg/100 g, respectively. Zinc, iron and calcium contents of preserved leaves had no significant ($p > 0.05$) difference compared to that in fresh forms. Maximum variability (100%) in the data was explained by nine principal components. Extracting the first two components, accounting for 56.5% variability in the data; revealed higher correlation among the three variables, ash, protein and fibre on one hand, while on the other hand calcium, moisture and beta carotene content. As much as the preservation techniques induced nutrient deterioration in the vegetables, the techniques still helped avail the key nutrients in cowpea leaves: protein, zinc, iron and beta carotene. Promotion of traditional dehydration technique for alleviation of seasonal availability of the vegetables can therefore not be ruled out as cost-effective strategies of addressing food and nutrition security in the arid and semi-arid lands.

Keywords: Blanched, cowpea leaves, dried, principle components, proximate composition