

Technical Note

The Mineral Content of Some Green Leafy Vegetables Commonly Found in the Western Part of Nigeria

ABSTRACT

Twelve locally grown green leafy vegetables were analysed for their mineral contents. The following concentration ranges (in mg g⁻¹ dry weight) were obtained for the elements determined: sodium, 0.11-0.76; potassium, 0.36-1.07; calcium, 0.24-0.73; phosphorus, 0.18-0.39; magnesium, 0.66-1.76; manganese, 0.03-0.12; iron, 0.35-0.56; zinc, 0.04-0.12.

INTRODUCTION

Among the people living in the western part of Nigeria, i.e. the Yoruba speaking states, the eating of vegetables is seen by a high proportion as a cheap way of increasing the quantity rather than the quality of their diet. As a result, an average Nigerian consumes about 65 g of fresh vegetables daily (Fafunso & Bassir, 1975). This fact makes a comprehensive analysis of these green leafy vegetables very important. A number of workers (Oke, 1968; Oyebola & Bassir, 1975) have reported on the mineral and vitamin contents of some of these vegetables. Comparing these results with that of Ifon and Bassir (1978), it is, however, seen that the list of locally consumed vegetables varies with ethnic groups.

The vegetables used in this present work are therefore those commonly consumed in the Yoruba speaking area of Nigeria.

EXPERIMENTAL

Collection and treatment of samples

All the samples of green leafy vegetables were collected from a local farm in Ibadan.

Sampling was always carried out in the morning and they were immediately transferred to the laboratory in clean plastic bags. Each sample was thoroughly rinsed with distilled water and left to drain at room temperature. The leaves were then dried to constant weight in an oven preset at 60°C. The dry samples were kept in desiccators until analysed.

Mineral analysis

The vegetables were dry-ashed using the method of Pearson (1970). The potassium, sodium and calcium contents were determined using flame photometry while iron, magnesium, manganese and zinc were measured using atomic absorption spectrometry. The phosphorus content, on the other hand, was measured using the Murphy & Riley method (Murphy & Riley, 1962).

RESULTS AND DISCUSSION

The results are summarised in Table 1. As shown in the table, all the green leafy vegetables examined had an average of 20% total ash. This was, however, with the exception of *Vernonia amygdalina* which had a rather low value.

Of the eight minerals determined, magnesium was the most abundant, ranging from 0.66 mg g⁻¹ in *Celosia argentea* to 1.76 mg g⁻¹ in *Corchorus olitorus*. It is, however, noteworthy that the red-stalked varieties of both *Celosia argentea* and *Amaranthus caudatus* contained slightly higher magnesium contents. In all except *Corchorus olitorus* and *Telefairia occidentalis*, zinc was the least abundant. The remaining six minerals had values between 0.11 and 1.55 mg g⁻¹. If all the calcium in the vegetables were in the available form, they could serve as an adequate source of calcium to the consumers. To ascertain this it is therefore necessary to determine both the oxalic and phytic acid contents of these vegetables.

TABLE 1
Mineral Contents of Some Green Leafy Vegetables Grown in the Western Part of Nigeria

Local name	Botanical name	% Moisture	% Total ash (dry basis)	Mineral content (mg g ⁻¹ dry weight)									
				Na	K	Cu	P	Mg	Fe	Zn	Mn		
Ewedu	<i>Corchorus olitorius</i>	90.6 ± 0.1	21.0 ± 1.0	0.11 ± 0.01	0.46 ± 0.01	0.41 ± 0.01	0.30 ± 0.01	1.76 ± 0.01	0.37 ± 0.02	0.041 ± 0.001	0.062 ± 0.002		
Ewedu	<i>Corchorus olitorius</i>	82.1 ± 0.2	16.0 ± 1.0	0.21 ± 0.01	0.36 ± 0.01	0.38 ± 0.01	0.28 ± 0.04	1.17 ± 0.04	0.53 ± 0.02	0.037 ± 0.001	0.082 ± 0.002		
Sokoyo-koto	<i>Celtosia argentea</i>	93.3 ± 0.7	22.0 ± 1.0	0.33 ± 0.03	0.65 ± 0.01	0.42 ± 0.01	0.29 ± 0.01	0.93 ± 0.01	0.56 ± 0.01	0.046 ± 0.001	0.032 ± 0.002		
Sokoyo-koto	<i>Celtosia argentea</i>	90.3 ± 0.6	22.0 ± 1.0	0.23 ± 0.02	0.69 ± 0.01	0.37 ± 0.01	0.18 ± 0.01	0.66 ± 0.01	0.41 ± 0.03	0.038 ± 0.001	0.036 ± 0.003		
Tete	<i>Amaranthus caudatus</i>	90.6 ± 0.3	24.0 ± 1.0	0.76 ± 0.01	1.28 ± 0.01	0.73 ± 0.01	0.31 ± 0.01	1.20 ± 0.02	0.43 ± 0.01	0.054 ± 0.001	0.069 ± 0.002		
Tete	<i>Amaranthus caudatus</i>	87.5 ± 0.3	20.0 ± 2.0	0.65 ± 0.01	0.86 ± 0.01	0.52 ± 0.01	0.32 ± 0.01	1.18 ± 0.01	0.40 ± 0.01	0.044 ± 0.001	0.055 ± 0.002		
Osun	<i>Solanaceae</i>	89.7 ± 0.5	24.0 ± 2.0	0.23 ± 0.05	0.59 ± 0.01	0.46 ± 0.01	0.23 ± 0.01	0.98 ± 0.02	0.52 ± 0.01	0.119 ± 0.006	0.123 ± 0.003		
Ewuro	<i>macrocarpon Vernonia</i>	89.1 ± 0.5	11.0 ± 1.0	0.15 ± 0.01	0.47 ± 0.01	0.24 ± 0.01	0.34 ± 0.01	1.03 ± 0.02	0.46 ± 0.01	0.069 ± 0.001	0.080 ± 0.005		
Amunu-tutu	<i>amygdalina Baella alba</i>	93.9 ± 0.2	25.0 ± 2.0	0.52 ± 0.01	0.79 ± 0.01	0.58 ± 0.01	0.24 ± 0.01	0.70 ± 0.02	0.37 ± 0.01	0.081 ± 0.001	0.118 ± 0.005		
Gbure	<i>Talinum triangulare</i>	94.1 ± 0.3	22.0 ± 1.0	0.45 ± 0.01	1.55 ± 0.04	0.48 ± 0.01	0.22 ± 0.01	1.00 ± 0.01	0.39 ± 0.02	0.054 ± 0.001	0.062 ± 0.003		
Ilasa	<i>Hibiscus esculentus</i>	78.5 ± 0.6	18.0 ± 1.0	0.25 ± 0.02	1.07 ± 0.01	0.59 ± 0.01	0.25 ± 0.01	1.10 ± 0.01	0.54 ± 0.01	0.080 ± 0.005	0.114 ± 0.003		
Iroko	<i>Telfairia occidentalis</i>	82.7 ± 0.4	19.0 ± 1.0	0.27 ± 0.01	0.46 ± 0.02	0.26 ± 0.01	0.39 ± 0.01	0.78 ± 0.01	0.35 ± 0.01	0.048 ± 0.001	0.042 ± 0.001		

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(Received: 9 November, 1982)