

cultures. In contrast, the remaining thyroid cultures gave cell medium radioactivity ratios from 0.1:1 to 0.4:1; not significantly different from that of the ERK cells (0.2:1). However, the cells of two of the thyroid cultures with low ^{131}I uptake contained traces of thyroxine and probably triiodothyronine (as well as mono- and di-iodotyrosine), when examined by paper chromatography after pancreatic digestion. The culture media in which both thyroid and ERK cells had been growing contained minute traces of ^{131}I in organic form (mainly as iodotyrosines). ^{131}I -labelled thyroglobulin was detected in the medium of only one thyroid culture. This material gave a radioactive peak in the alpha-globulin region on electrophoresis, which was displaced towards the cathode on adding dilute Hashimoto serum containing thyroglobulin antibody. This particular culture was grown in the medium containing calf-serum, and the cells concerned did not concentrate ^{131}I .

There was therefore suggestive but not conclusive evidence that the thyroid cells were making thyroglobulin-like compounds. A more definite finding was that these cells produced enzymes with proteolytic activity. Ability to make these enzymes was not, however, specific to thyroid cells, since they were also found in the ERK cultures. The presence of proteolytic activity in the medium would inevitably make the detection of thyroglobulin difficult by any technique.

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Nutritive Value of Nigerian Water Melon

WATER melon (*Citrullus vulgaris*) is cultivated in Nigeria principally for the semi-drying oil which is extensively used for cooking and may be used as a substitute for cotton seed oil. The seeds are also used as vegetable soup, but the flesh is never eaten.

The present work was undertaken to investigate the nutritive value of the seeds as a basis for future work. The analytical work has been concerned with proximate analysis, mineral composition and the determination of oxalic, hydrocyanic and phytic acid content.

The seeds were bought at different times from the market, dried overnight at 100° C, and finely ground. Crude protein, crude fibre, ash, ether extract and hydrocyanic acid were determined according to the Association of Official Agricultural Chemists' *Methods of Analysis*¹. Potassium was estimated by flame photometry, other minerals by means of a photoelectric spectrometer, oxalic acid by the method of Dye² and phytic acid by the method of McCance and Widdowson³.

Table 1 shows a typical proximate analysis of the seeds. Table 2 gives the distribution of the major inorganic constituents and Table 3 the minor inorganic constituents, while Table 4 shows the oxalic, hydrocyanic and phytic

Table 1. PROXIMATE ANALYSIS OF NIGERIAN WATER MELON

Dry matter %	Crude protein %	Ether extract %	Crude fibre %	Carbohydrate %	Ash %	Calories
91.92	31.88	57.06	8.24	4.37	6.17	565.66

Quantities are given as percentage fresh weight.

Table 2. MINERAL STATUS OF NIGERIAN WATER MELON; MAJOR ELEMENTS

N %	P %	K %	Na p.p.m.
5.10	1.456	0.54	154

Table 3. MINERAL STATUS OF NIGERIAN WATER MELON; MINOR ELEMENTS

Ca %	Mg %	Mn p.p.m.	Fe p.p.m.	Cu p.p.m.	B p.p.m.	Zn p.p.m.	Mo p.p.m.	Al p.p.m.
0.13	0.33	42	75	42.2	12.5	50	1.0	58

Table 4. OXALIC, HYDROCYANIC AND PHYTIC ACID CONTENTS OF NIGERIAN WATER MELON

Oxalic acid %	Hydrocyanic acid mg %	Phytic acid P mg %	Phytic acid P as % of original P
0.8	0	600	41

acid contents. All determinations are based on percentage of dry matter.

The seeds are very rich in protein and serve as a protein supplement, forming one of the most important sources of protein in the Nigerian diet. Nearly 60 per cent of the seed consists of oil. The oil is used as a substitute for palm oil in cooking, and after the oil has been extracted the residue is wrapped in leaves and steamed to give 'cake'.

The seed is a good source of energy, 100 g supplying about 566 calories. The ash content is high. The important dietary constituents of the ash are the calcium, phosphorus and iron contents. It is poor in calcium and iron but relatively rich in magnesium. The phosphorus content is very high. Of all the Nigerian seeds and vegetables analysed, water melon contains the highest phosphorus content. This gives a Ca : P ratio of 1 : 11. Although the ratio is unbalanced (1 : 2 is the satisfactory ratio), since it is taken along with other foodstuffs the satisfactory ratio could easily be met.

It is generally accepted that, under certain conditions, dietary calcium is precipitated in the intestine, resulting in reduced calcium availability, which restricts growth and even causes rickets. The two acids that are supposed to be responsible for this are oxalic and phytic acids. Furthermore, the lowering of the calcium by excretion as calcium oxalate takes place through the kidneys. Crystals of calcium oxalate are deposited in the uriniferous tubules in the form of granules or stones, leading to oxaluria.

Calcium determinations in foodstuffs are therefore of little significance from the nutritional point of view, unless taken in conjunction with oxalic or phytic acid content or both. Water-melon seeds contain negligible amounts of oxalic acid, but nearly half the phosphorus occurs as phytic acid. Nevertheless, the amount of non-phytic phosphorus is still appreciable.

Cyanogenesis has been extensively studied in many plants, chiefly because of the toxic effect that the deadly poisonous hydrocyanic acid produced could have on livestock. Hydrocyanic acid does not occur free, but combined with sugars to form an insoluble, non-toxic compound known as cyanogenetic glycoside. The water-melon seed does not contain any hydrocyanic acid.

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Rat Liver Sorbitol Dehydrogenase

THERE has been considerable interest in the effect of various diets and hormones on liver enzymes. One of the problems related to the interpretation of the results is the dependence upon the method of reporting the data. This problem arises because various treatments cause changes in liver nitrogen content, liver cellularity, body-weight, and ratio of liver-weight to body-weight. Several considerations related to the reporting of results obtained after dietary and hormonal treatment have been discussed previously^{1,2}. It would therefore be interesting if the