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Preliminary studies on the genetic nutritive potential of three African oil seeds

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ABSTRACT: Three african oil seeds of soyabean (Glycine max L. Merill) Beniseed (Sesamu indicum L.) and melon (Cucumis melo L.) were evaluated as potential oil seeds in a southern guinea savannah agro-eosystems, using soyabean as a standard reference crop. Experimental techniques included approved Association of Official Analytical Chemist (AOAC1984) for proximate analysis, kjedahl for protein estimate and soxlet extraction using petroleum spirit as a solvent for l content. While chemical composition values compare favourably in the three experimental materials, crude protein data vary appreciably in the order soyabean>melon>beniseed. However, carbohydrate contents are in the order Beniseed>melon>soyabean. Oil weight per 200g of the samples indicate variable values in the order Beniseed>melon>soyabean.

Key Words: African oil seeds; Soyabean; Beniseed; Melon; Nutritive potential.

Introduction

Oil seeds are a very important component of tropical agriculture since they provide readily available and highly nutritious human and animal diet (Weiss, 1983). Many also have appreciable industrial uses since they are relatively easily incorporated into local manufacture industries (Weiss, loc cit)

From utility point of view, soyabean has been universally accepted has high value crop because of its high protein content and oil quality. For these and other atttributes elsewhere, it has been exploited and explored perhaps more than any other oil seed crops and usually used as a reference crop especially in terms of protein content (FAO, 1980). However other oilseeds abound especially in the tropical agro-ecosystems with minimal or marginal exploitation in terms of economic values that are often ignored or overlooked. The resultant laxity informs delving into other tropical oilseeds for extant nutritive potentials.

Materials and Methods

Soyabean, melon and beniseed grains were milled separately and analysed fo chemical contents by way of Association of Official Analytical Chemist (AOAC, 1984) for moisture , ash, crude fibre, protein,fat and carbohydrate contents. Mineral analyses for Phosphorus (P) Potassium (K) Magnesium (Mg) Calcium (Ca)

Sodium (Na) Copper (Cu) and Manganese (Mn) were determined accordingly (Perkin corp, 1971. other attributes of acid, peroxide saponification and iodine were also determined.

Results and Discussion

Table 1 shows the percentage values of proximate analysis of soyabean, melon and beniseed. While crude protein score of 29.42 was not acceptable for soyabean compared with KADP (1989) of 39-40, parallel values for melon (20.4) and beniseed (19.20) compare favourably with data from previous analysis (purseglove, 1986). Other comparative values for dry matter, moisture, crude fat and fiber, total ash, carbohydrate and energy contents could be inferred from table 1(Hedrick 1972).

Analysed data on physico-chemical characterization of the oil contents from the experimental material is shown in Table 2. while high coefficient of variation is evidence among the experimental material (table 2) as well as in saponification and peroxide values, data on iodine values were not significantly different among the materials.

Table 3 represents the comparative mineral composition contents of soyabean, melon and beniseed. While high percentage coefficients of variation suggest significant differences among the experimental material with respect to calcium and phosphorus,such values are not significantly different in respect of magmesium, potassium and sodium.

The nutritive values of indigenous oil seeds especially of African origin hardly have any significant impact in global economy (Adenaike 1988, Ogunremi, 1986, Olowe and Busari, 1994). However with ever incresing world population especially in the developing countries of Africa, Asia and India, concerted efforts to combat malnutrition and underfeeding cannot be over emphasized(Nayar and Mehra, 1970). The nutritive value of non-conventional oil seeds like sesame and melon received pioneer attention from previous work (Patt, 1971, & Schilling and Cattan 1991). It is expected that the results from this exercise would further enhance previous encounters in this respect.

Table 1: Proximate composition of beniseed, melon and soybean .

Crop/seed	Dry matter	Moisture content	Crude fat	Crude fibre	Total ash	Crude protein	Carbohydrate content	Energy content
Soybean	88.530	11.470	18.930	5.300	5.470	29.420	29.410	405.690
Melon	87.790	10.270	24.690	3.650	7.800	20.350	33.240	436.570
Beniseed	89.650	10.700	20.950	3.667	7.960	22.990	33.730	415.460
Mean	88.650	10.700	20.950	3.667	7.960	22.990	33.730	415.460
S.D	0.931	0.668	3.240	1.625	2.574	5.598	4.585	18.299
%CV	1.050	6.243	15.464	44.314	32.337	24.350	13.593	4.404

Table 2: Physico-chemical parameters of the oils.

Crops/seeds	Acid Value(Mg Of KOH)	Peroxide value (per millilol)	Saponification value (Mg of KOH)	Iodine value (Mg of KOH)
Beniseed	5.105	7.650	21.038	25.216
Melon	1.178	4.500	9.818	26.141
Beniseed	0.729	3.060	7.012	23.634
Mean	2.337	5.070	12.623	25.634
S.D	2.407	2.347	7.422	0.508
%CV	103.000	46.292	58.793	1.982

TABLE 3: MINERAL COMPOSITION

Crop/ seed	Mg%	K%	Ca%	Na%	P%
Soybean	3.915	3.985	0.004	4.939	1.125
Melon	4.350	4.022	0.256	4.954	0.275
Beniseed	3.986	3.948	0.004	4.969	0.862
Mean	4.084	3.985	0.088	4.954	0.754
S.D	0.233	0.037	0.145	0.015	0.435
%CV	5.705	0.928	164.773	0.303	57.692

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