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Proximate and Mineral Composition of Wild *Corchorous olitorius* Seed Flour.

Oloye DA, Odeja OT, Faboya ET, and Ibrahim TA*.

Department of Food Science and Technology, Rufus Giwa Polytechnic, PM. 1019 Owo, Ondo State, Nigeria.

Short Communication

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*For Correspondence

Department of Food Science and Technology, Rufus Giwa Polytechnic, PM. 1019 Owo, Ondo State, Nigeria.

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ABSTRACT

Raw seed flour of wild *Corchorous olitorius* was evaluated for its proximate composition and mineral content using standard procedures.The mean values of parameters fro proximate composition (%) were: moisture, (5.32±0.3), crude fibre (6.60±0.1), carbohydrate (by difference) (21.99±0.1) and the calculated energy (kg/100g) (1892.3). Minerals (mg/100g) included ;Na (25.8±0.4),K (37.2±0.1), Ca (28.9±0.5), Fe (0.9±0.1), P (19.5±0.2) and Mn (1.4±0.2).The results from this study show that the seed flour of wild *Corchorous olitorious* is a good source of energy, protein and minerals which proved the flour to be used as food fortifier.

INTRODUCTION

Many plant protein usually in the form of protein extract or seed flours are being investigated and tested for new product such as low cost fabricated foods which are nutritious, attractive and acceptable to consumer just like conventional foods from meat, fish, and dairy products [1]. Research attention that has been directed toward increasing utilization of plant protein sources for food use include pumpkin [2] peanut [3] pigeon pea [4] African yam bean [5] and Akee apple [6].Seeds have nutritive and calorific value which make them necessary in diets. They are good source of edible oils and fats [7].They also form an important part of the diet of human being and are usually regarded as good food [8]. The significance of seeds especially in the diet of the Nigerian population is increasing for several reasons. First, seeds have nutrient and caloriful value which make them necessary in diets and secondly since 1980, Nigeria experienced decline in yield for cereals, tubers and root crops .This problem has been compounded by poor economic growth, reproduction of rural environment especially in crude oil rich communities, and insincere government [9]. As a result, seeds can be described as a good source of famine food and also potential raw material for local industries [10].

Corchorusolitorius locally known as the malysia'ssabahan is an animal herb that belongs to the family Tiliaceae. It's leaves and roots eaten are as herbal medicine and as vegetable by local people of various part of middle and south east Asia .It is also commonly known as wild okra and is widely consumed as a vegetable among rural communities in most parts of Africa [11]. In West Africa, it is commonly cultivated and very popular among people of all classes especially in Nigeria .According to [10], wild okra is used in folk medicine in the treatment of gonorrhea, pain, fever and tumor. *Corchorusolitorius* is known to contain high level of iron and folate which are useful for the prevention of anaemia[9]. It is an excellent source of vitamin A and C, fibre, minerals including calcium and iron and other micronutrients. It is extensively consumed as a healthy vegetable in Japan because it contains abundant carotenoids, vitamin B, B_2, C and E and minerals [11]. The vegetable is prepared and eaten as soup by many people in Nigeria and the seeds were neglected except for the propagation of the vegetable. However the nutrient value of the seed and its contribution to the nutrition of man has not been thoroughly investigated. Although the vegetable has the potential to be developed as a valuable crop, very little is known about its role in the overall food acquisition system especially in relation to its contribution to the intake of important micronutrient s apart from been a soup vegetable. The present study was undertaken to investigate the chemical composition of flour produced from wild *Corchorousolitorius* seeds to determine its potential in food formulation.

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MATERIALS AND METHODS

Collection and preparation of samples

The seeds of wild *Corchorusolitorius* used for this study were collected from an uncultivated farm land along Benin – Owo road, Owo. The seeds were shelled and screened to remove the bad ones. The seeds were dried and milled into flour which could pass through a 0.5 mm sieve. The flour was stored in capped plastic containers and kept in a desicator until used for analysis.

Proximate Analysis

The proximate analysis of the flour for moisture, ash, protein, crudefibre, fat were carried out using the methods described by [12]. All values were reported in %.

Mineral Analysis

The minerals; calcium, magnesium, iron, manganese, and phosphorous were determined by atomic absorption spectrophotometrymethod of [13] while sodium and potassium were determined using flame photometry method of [14] .The analysis were done in triplicate and results were given as mean of the results ± standard deviation.

RESULTS AND DISCUSSION

Table 1 showed the values of proximate composition of the raw wild *Corchorusolitorius* seeds flour. It was estimated that the flour had moisture content of 5.32±0.4 which was low when compared to moisture content of most leguminous flour usually between 7.0±00 and 11.0±00 as reported by [15]. This result was close with the findings of [16] for roasted and defatted cashew nut flour (5.52±0.2%),[15]for fluted pumpkin seed flour for 5.5±1.50% and 5.5% respectively. The result of the findings of [17] for snake gourd seed flour was a bit lower with 3.13±0.39%. The ash content of the seeds flour was quite high (5.09%) and higher than the values estimated for snake gourd seed flour (2.93±0.05) by [17] but close to the findings of [15] for pumpkin seed flour (5.08±0.1) and close to that of [16] for defatted cashew nut flour (4.4±0.1%). It has been estimated that ash content of most nut seeds and tubers should fall in the range 1.0-2.5% [18] in order to be suitable for animal feeds. The ash content of this flour do not fall within the recommended range, hence, it cannot be used for animal feeds. Crude protein in the flour averaged 28.05% which is comparable with those of soybean (35.1%) and melon seed (33.3%) [19]the pumpkin seed flour (30.42±0.7g/100Dw) [15]and snake gourd seed flour (30.18±2.05%)[17].The seed flour is highly comparable to protein rich foods such as soybean, cowpea, pigeon pea, melon, pumpkin and snake gourd seed flours ranging between 23.1-33.0% [15].This result showed that the wild *Corchorusolitorius* seed flour can supply the recommended daily intake of protein for children (23.0-36.0g/100g)[20].The crude fat (32.95±1.3) is low compared to the values of pumpkin seed (47.01) as reported by [15] but within the values of [21].Fat is an important food constituent because it promotesfat soluble vitamins absorption [22]. Also it has a high energy value and does not add to the bulk of the diet[23] .The crude fibre of the seed flour (6.60±0.05%) was high and comparable to to that of snake gourd (8.00±0.03%) as reported by [17]but lower than the findings of [16] which was 1.42±0.06% for deffated cashew seed flour and 2.6±0.06 for pumpkin seed flour. It is good to know the result is close to the recommendation of [24] for legumes with mean values ranging between 5-6%. Crude fibre help in the maintenance of nornal peristaltic movement of the intestinal trait hence diet containing low fibre could cause constipation and could lead to colon diseases, piles, cancer and appendicities [25].The result of carbohydrates (by difference) 27.40±0.2% is comparable to the result of [26]of 26.8% for flour of legumes ,[16] 25.3% for deffated cashew flour which are within the acceptable range of mean values of legumes 20.60% dry weight[17]but higher than the values reported by [15] 11.4±0.03 and [17]7.59± 0.02 for fluted pumpin and snake gourd respectively.The carbohydrate value of the flour showed that it is a rich source of energy. This could be due to the high level of crude fat and protein in the studied sample.Table 2 showed the mineral (mg/100g) of the deffated raw wild corchorous olitorious seeds flour.The most abundant of the minerals studied was magnesium (46.3±0.2) followed by potassium (37.2±0.1), calicum (28.9±0.5), sodium (25.8±0.4) and phosphorus (16.5±0.2). The leasts were iron and manganese. Magnesium has been reported to be involved in maintaining the electrical potential in nerves and activation of some enzyme system [23]. The high amount of potassium observed in the seed flour agreed with the observation of [24]who reported that potassium is high in plant foods from Nigeria soil.The potassium/sodium ratio(K/Na) was 1.44 which is greater than recommended value of 1.00 and hence consumption of the seed may be more beneficial to the body system by salting with NaCl. Apart from improving th taste, it will also enhance the salt balance of body fluid .*Corchorus olitorius* seed flour may serve this purpose. High amount of Ca, k and Mg in diets have been reported to reduce blood pressure. The calcium content of the flour is in agreement with the findings of [17]27.62±1.2 for snake gourd feed flour but lesser than that of [27] for legumes and [16] for cashew seed flour. Calcium is responsible for teeth and bone formation in conjuction with phosphorus, magnesium, maganese, vitamin A, C,D, chlorine and protein [28].The mean value of phosphorus (19.5±0.2) is relatively close to that of calcium. Phosphorus is always found with calcium in the blood. The low Ca/P (1.48) facilitates calcinations of

calcium in the bone while Ca/P greater than 2 helps to increase the absorption of calcium in the small intestine[29]. The Ca/P ratio of the flour is greater than 1 indicating that it would serve as a good source of mineral for bone formation.

CONCLUSION

The studied flour raw wild *Corchorusolitorius* seed flour is rich in important food nutrient comparable to highly nutritious foods. The presence of protein content in the flour showed its usefulness as a good source of amino acids for children and adults. A high level of carbohydrate and fat ensure good energy source. The presence of acceptable level of elemental minerals showed its usefulness in correcting nutritional disorder and diseases.

Table 1: Proximate composition of Raw flour of wild *Corchorus olitorius*

Parameters	Values (%)
Ash content	5.09
Crude Fibre	6.60
Moisture content	5.32
Crude fat	32.95
Crude protein	28.05
Carbohydrate (by difference)	21.99

Table 2: Mineral composition of Raw flour of wild *Corchorus olitorius*

Minerals	Values (mg/100g)
Magnesium	46.3
Potassium	37.03
Calcium	28.9
Sodium	25.8
Phosphorus	19.5
Iron	0.9
Manganese	1.4

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