PHYTOCHEMICAL SCREENING OF CRUDE EXTRACTS OF *LAGENARIA BREVIFLORA* (BENTH) ROBERTY SEEDS

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Abstract

The study was undertaken to determine the proximate composition of Lagenaria Breviflora (Benth) Roberty seeds and to screen the phytochemicals present in the crude aqueous extract of Lagenaria Breviflora (Benth) Roberty seeds . The fresh fruits were purchased from Olorunda Abaa market Ibadan, Oyo State, Nigeria. The seeds were then removed from the fruits washed, drained and were grouped into three treatments, subjected to the three processing methods; treatment 1 was the control; LBS were sun-dried for three days, treatment 2, LBS were oven dried at 105°C for24 hours while in treatment 3; the seeds were soaked in hot Water at 60°C till cold, then drained and sundried.

Standard phytochemical methods were used to test quantitatively the presence of saponins, tannins, anthraquinones, terpenoids, cardiac glycosides, phenol, steroid, alkaloids, phlobatanins and flavonoids.The seed in each treatment were analysed for their proximate composition. The result of the proximate composition revealed slight increase in % (CP and E.E) and highest value of % CF in HWS compared with SD ***Preliminary phytochemical screening revealed the presence of saponins,****terpenoids, steroid, alkaloids,* ***and cardiac*** *glycoside.* ***However*** *phenol, tannin, and phlobatannins, flavonoids, and anthraquinones were not detected. These findings therefore, suggest that there is an indication that Lagenaria Breviflora (Benth) Roberty seeds contain important phytochemicals that may play significant roles on animal when consumed.*

Keywords: *Lagenaria Breviflora* seeds, phytochemical screening, aqueous extract

Introduction

Major gap exists between the demand and supply of convectional feed resources for feeding livestock in the world. This is due to stiff competition between human and livestock. Therefore, there is need to explore the use of non-convectional but potentially useful feed resources that are locally available and underutilized. Potentially available include crop residues, agro-industrial by- products, seed meals, leaf etc. The one of concerned in this study is the use of *Lagenaria breviflora* (Benth) Roberty seeds. Like soyabean the seed of *Adenopus breviflorus* is a rich source of most essential amino acids (Oshodi, 1996) and oil (Akintayo and Bayer, 2002).

Lagenaria breviflora Roberty belongs to the family cucurbitaceae (Hanno *et al.*, 2009). It is a perennial climber ascending to the forest canopy, occurring from Senegal to the West Cameroons, and generally widespread in tropical Africa (Oridupa *et al.*, 2011). In Nigeria, different tribal groups have their indigenous names as: "Ogbenwa" in Igbo, "Tagiri" in Yoruba (Burkill, 1995). Its seeds and fruits have been used in folk medicine since antiquity. The fruit of *Lagenaria breviflora* Roberty is widely used in folklore medicine in West Africa as herbal remedy for the treatment of measles, digestive disorders, and as wound antiseptics, farm animal farmers use the fruit for the treatment of Newcastle disease and coccidiosis in various animal species, especially poultry (Sonaiya, 1999). Laboratory investigations have shown evidences in support of its anti-bacterial activity (Tomori *et al.*, 2007).

In order to explore its potential use as feed resource in poultry production especially in area of diet there is need to determine the phytochemicals present in the seeds. It has been established that the methanolic extracts of *L. breviflora fruit* contained secondary metabolites such as alkaloids, tannins, anthraquinones, terpenoids, flavonoids and reducing sugars (Banjo *et al.*, 2013). Adeolu *et al.* (2013) reported that phytochemical analysis of the leaves of *Lagenaria breviflora* showed the presence of tannins, saponins, alkaloids and flavonoids. There is paucity of information on phytochemical present in *Lagenaria breviflora* seeds. The present study was therefore undertaken to determine the proximate composition of *Lagenaria breviflora* Roberts seeds and to quantitatively investigate the phytochemical constituents, of the aqueous seed extract of *Lagenaria breviflora* Roberts seeds.

Materials and Methods

The experiment was carried out in Agricultural Biochemistry and Nutrition Laboratory,

Department of Animal Science, University of Ibadan. Fresh matured fruits of *Lagenaria breviflora* (LB) were purchased from Olorunda Abaa market Ibadan, Oyo State, Nigeria.

Processing of *Lagenaria breviflora* seeds (LBS)

The fresh fruits were washed, lacerated and allowed to rot for a period of three days for easy removal of the seeds. The seeds were then removed, washed, drained and were grouped into three treatments. Each group was subjected to the three processing methods; treatment 1 was the control, LBS were sun-dried for three days. In treatment 2, LBS were oven dried at 105°C for24 hours while in treatment 3; the seeds were soaked in hot Water at 60°C till cool, then drained and sun-dried. At the end each treatment the seeds were pulverised, put in an air-tight container and stored until further analysis.

Preparation of Seed Extract

Five grams (5g) of the powdered sample was extracted with distilled water of 200 ml for 24 hrs. The mixture was decanted and filtered using filter paper and filtrate was used for the phytochemical analysis.

Chemical analysis

The samples were analysed for proximate component (moisture content, crude protein, ether extract. crude fibre, ash) using methods of AOAC, 1990. The NFE was estimated by difference of summation of moisture content, crude protein, ether extract, crude fibre, ash from 100.

Phytochemical Analyses

The phytochemical analysis of the secondary metabolites was carried out. Saponins, tannins, anthraquinones, terpenoids, cardiac glycosides, phenol, steroid, alkaloids, phlobatanins and flavonoids were determined using standard procedures of Harborne (1973), Trease (1989) and Sofowora (1993)

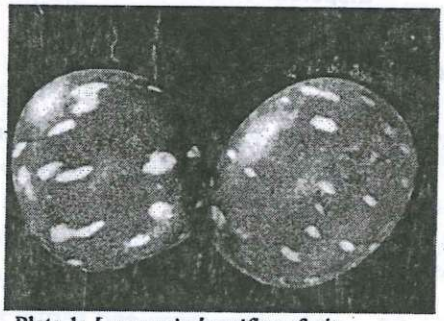

Plate 1: *Lagenaria breviflora* fruits

Plate 2: *Lagenaria breviflora* seeds

Results

Phytochemical screening

Phytochemical screening of raw and processed *L. breviflora* seeds showed the presence of **saponins,** terpenoids, steroid, alkaloids, **and cardiac** glycoside while phenol, tannin, and phlobatannins, flavonoids, and anthraquinones were not detected. (Table1).

Proximate composition of *Lagenaria breviflora* seeds

The result of the proximate analysis of the test ingredients are presented in table 2 crude protein was 32.41, 32.55 and 35.35% for SD, OD, and HWS respectively. The highest value was observed in HWS for percentage cp and Ether extract and lowest value in NFE and ash content

Discussion

Phytochemical studies revealed the presence of saponins. Saponins have the property of precipitating and coagulating red blood cells. Some of the characteristics of saponins include formation of foams in aqueous solutions, heamolytic activity, cholesterol binding properties and bitterness (Sodipo *et al.*, 2000). This result agrees with the findings of (Balogun*et al.*, 2014) who find similar result with ethanolic extract of *Lagenaria breviflora* fruit sample air dried in the shade for 12 to 14 days and then pulverized to coarse powder. On the other hand, this is contrary to report of (Banjo *et al.*, 2013) that analyse the phytochemical contents of *Lagenaria breviflora fruit by cutting* it into pieces, and grind to liquid pulp using methanolic solvent showed enhanced reducing sugar, anthraquinone and terpenoids. But flavonoids, tannins and alkaloids were least while saponin and cyanogenic glucoside were absent.

Steroids have been reported to have antibacterial properties (Okwu and Okwu, 2004,) and they are very important compounds especially due to their relationship with compounds such as sex hormones (Nobiri *et al.*, 1994) Alkaloids have been associated with medicinal uses for centuries and one of their common biological properties is their cytotoxicity (Antherden1969). Several workers have reported the analgesic (Okwu, 2001), antispasmodic and antibacterial properties

of alkaloids. Glycosides are known to lower the blood pressure according to many reports (Nyarko, 2001). The result of the proximate composition revealed slight increase in % (CP and EE) and highest value of % CF in HWS compared with SD. The results obtained in this study thus suggest the identified phytochemical compounds in the seeds may provide an increasingly valuable reservoir of bioactive compounds.

Conclusion

The seed of *Lagenaria breviflora is* slightly high in crude protein. The present study reveals the presence of some phytochemicals therefore further studies should be carried on the quantitative assessment of phytochemicals present to ascertain the best processing methods to reduce or remove the phytochemicals

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Table 1: Qualitative Phytochemical Screening of *Lagenaria Breviflora* Roberty Seed

Phytochemicals	S.D(Raw)	O.D	HWS
Tannins	-	-	-
Saponins	+	+	+
Flavonoids	-	-	-
Cardiac glycosides	+	+	+
Anthraquinine	-	-	-
Phlobatannins	-	-	-
Steroid	+	+	+
Phenols	-	-	-
Alkaloids	+	+	+
Terpenoids	+	+	+

Key = + Present, - Absent, SD (Sun-Drying), Od (Oven-Drying), Hws (Hot Water Soaked)

Proximate composition of *Lagenaria breviflora* seeds

Parameters (%)	SD	OD	HWS
Moisture content	3.79	2.29	3.29
Crude protein	32.41	32.55	35.35
Ether extractives	33.34	31.80	33.85
Crude fibre	5.00	4.20	5.40
Nitrogen Free extracts	21.55	25.52	19.11
Ash	3.19	3.64	3.02