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PHYTOCHEMICAL PROPERTIES AND MINERAL COMPOSITION OF *BUCHHOLZIA CORIACEA* (WONDERFUL COLA) SEEDS

[1]INYANDA, D. O, [2]AUDU, I. S, [3]AGBEYO O. A[4], ABDULMUTALIB M. A AND JIBRIN M.[5]

[1,3,4]Department of Chemistry/Biochemistry Federal Polytecnic Nasarawa. Nasarawa State. [2]National Biosafety Management Agency Abuja. [s]Department of Biology and Microbiology, Federal Polytechnic Nasarawa.

Corresponding Author: debrainyanda@gmail.com

ABSTRACT

Wonderful cola seed is a tropical plant and a family member of Capparidaceae. This research concept was aimed at examining the seeds of Buchholzia coriacea for phytochemical and mineral composition. Cold maceration method of extraction using ethanol and hexane solvent was used to obtained the active crude extract of the seeds. Photochemistry results indicates that both ethanol and hexane possessed steroids, flavonoids, tannins, carbohydrates, saponin and phenol. With alkaloids and legal test only present in ethanol and cardiac glycoside and alkaline reagent only present in hexane extract. Mineral content ANALYSIS was conducted FOR Buchholzia coriacea seeds using Atomic Absorption Spectroscopy to detect iron, lead, calcium,phosphorus, sodium,zinc, magnesium , potasium and

Introduction

The plant called Wonderful cola is a medicinal plant grown all over the world just as garlic, and moringa amongst others. These plants are used as alternative medications to promote health for people in Africa and the whole world at large for decades. This medicinal plant is used as an alternative form of treatment or healing which is well documented and practiced Adisa *et al.* (2011), Adjanohoun *et al.* (1996). *Buchholzia coriacea planthaves has* been reported to possess phytonutrients such as (protein, fiber, fat/oil, carbohydrate, minerals and

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cupper in.thier elemental state The results indicate that wonderful cola seeds WERE rich in essential minerals like IRON (1.22mg/kg), calcium(22.43mg/kg), potassium(47.53mg/kg), magnesium(22.54mg/kg) and zinc (21.12mg.kg). Buchholzia coriacea seeds .also possess other minerals such as Phosphate (2.54mg/kg), Cupper (2.12mg/kg) and Sodium (14.12mg/kg). Looking at other results obtained from other research conducted on Buchholzia coriacea seeds .the mineral content varies depending on plant location.

Keywords: Phytochemistry, Buchholzia coriacea seeds, Minerals, Atomic Absorbtion Spectroscopy and essentials.

Vitamins) and phytochemicals, responsible for good nutritional and the general human health and well-being Aremu *et al*. (2005).

Buchholzia. coriacea, originated from the Capparidaceae family, and was named after a botanist called RW Buchholz, who growed plants in the lates 1800 in the city of Cameroon. The plant is a small to medium-sized evergreen tree and grows to about 20 m tall it is found in Nigeria, Cameroon, the Central African Republic, Angola, Ghana etc. among other places. The plant bark is smooth, dark green or blackish-brown in color. It has a thick crown, big glossy leathery leaves grouped spirally and clustered at the branch tips, and prominent cream-white flowers in racemes at the branch ends Adisa *et al*. (2011), the part of the plant's consumed mostly are the seeds, which are either cooked or eaten raw Ezekiel *et al.* (2009).

This research is aimed at identifying the phytochemical constituents and mineral components of wonderful kola seeds and pulp

Indeed, the nutritional and photochemical evaluation of *B. coriacea* seeds showed that it contained minerals and a significant class of phytochemical compounds such as alkaloids, glycosides, saponin, steroids, tannin, flavonoids, terpenes and phenols Ajaiyeoba *et al.* (2001), AOAC. (2009).

MATERIALS AND METHODS

Sample Collection

Seeds of *Buchholza coriacea* were obtained from the sabogari market in Kaduna state. It was then transported to National Institute For Pharmaceutical research and Development (NIPRID) in Idu FCT. Where it was identified by Dr Grace Ugbabe and was issued a specimen Voucher number: NIPRID/H/7297

Sample Treatment

The sample was washed in the raw material laboratory severally with clean water and then rinsed with deionized water. The seed was then removed from the pulp using a hammer. The separated seed was shade dried on a sack for six weeks. The dried samples were then grinded into fine powder using a mortar and pestle. The powder obtained was placed in an airtight container and stored on the shelf in the laboratory for further analysis.

Extraction

Crude extracts were obtained by cold maceration method Aremu *et al*. (2005). 250g of sample was weighed into a 1000ml conical flask. 750ml of each solvent (ethanol and hexane) was added separately into the already weighed powder. Uniform mixtures were achieved by agitating at interval of 3 hours within the 72 hours of extraction. The extracts obtained were concentrated using a rotatory evaporator and then placed into well labeled sterile sample containers for future use

Phytochemical Analysis

The phytochemical analysis of *Buchholza coriacea* seed extracts was conducted. Using. Standard methods from the Association of Official Analytical Chemistry AOAC. (2009).phytochemical parameters such as phenol, steroids, saponins, alkaloids, tannins, flavonoids, phlobatannins cardiac glycoside and alkaline reagents

Mineral Analysis

MINERAL content such as (calcium, phosphorous, calcium, magnesium, zinc, iron, and potassium was accessed using Atomic Absorption spectroscopic method .of analysis. This was achieved by ashing and dissolving the samples in 10% Hydrochloric acid. Prescribed by AOAC. (2009).

Result and Discussion

Results

Reviewed that both the ethanol and hexane crude extracts of wonderful cola seeds possessed constituents like steriods, saponins,, phenol, flavonoids, tannins, legal test, carbohydrates and alkaline reagents. Concurring with results obtained by Mbata *et al*. (2009).

Table 1: Phytochemical Screening results of crude extracts of Wonderful cola seed.

Phytochemicals	Hexane Extracts	Ethanol Extracts
Steroids	+	+
Alkaloids	-	+
Flavonoids	+	+
Tannins	+	+
Saponin	+	+
Cardiac glycoside	+	-
Alkaline reagents	+	-
carbohydrates	+	+
Legal test	-	+
Reducing Sugar	+	+
phenol	+	+

KEYS DETECTED (+) NOT DETECTED (-)

Results of Mineral analysis of the powder seeds of wonderful cola were obtained by atomic absorption spectrometry.

Table 2: Mineral analysis of *Buchholza coriacea seed*

Parameters	mg/kg
Iron	1.225
Lead	0.046356
Calcium	22.43124
Phosphorus	2.54764
Sodium	14.12135
Zinc	25.1213215
Magnesium	22.54
potassium	47.53124
Cupper	2.1240

DISCUSSIONS

Phytochemical results revealed that both hexane and ethanol crude extract of Bucholzia coriacea seed possessed phytochemical constituents such as Steroids, Flavonoids, Tanins, Saponins, Carbohydrates and Reducing Sugar. While only

hexane extract showed Alkaline reagents and cardiac glycoside reducing compounds. Ethanol extracts reviewed Alkaloid presence and this is supported by report from F. S. Oluwole *et al*. (2023) the presence of alkaloid in the Ethanol crude extract confirms that plant elements have some therapeutic effect which can be used as painkillers for medicinal purposes Ibrahim *et al*. (2012) phenolic compounds was found in both extracts and this confirms it use in disinfection and a standard with which other bacterial are compared. This observation support Olukoya *et al*. (2022).

Mineral composition of seeds of wonderful cola is shown in table 2 above. Minerals results for Na, K, Mg, Fe, Ca, Zn, Cu and Pb were obtained. Potassium concentration was higher than all others and this supported the results reported by Aremu *et al.* (2005). Who confirmed that potassium is the most dominant mineral present in Nigeria Agricultural plants material. .Sodium with value 14.12135mg/kg was within the recommended range and this indicates that seeds of wonderful cola can support formation of bone in children and help reduce high blood pressure in man FND Food. (2002), value obtained for Calcium, phosphorus and magnesium were within permissible limit and as such their present in the seed makes it support teeth, bone maintenance in adult and bone formation in children. This result is supported by report from Akinnhanmi *et al*. (2008)

The seeds have low iron level (1.225 mg/kg).and This confirms that the seed cannot be used as an alternative for blood forming agent as it fell below RDA values Bogert *et al.* (1994)

CONCLUSION

The presence of phytochemicals and minerals constituents in the ethanol and hexane crude extract of *Buchholzia coriacea* seed in this finding has confirmed its effectiveness in the treatment of illness it is supported by F. S. Oluwole *et al.* (2023)

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