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Phytochemical Screening of Some Plants used in the Treatment of Gastroenteritis (Kurga) and Fungus Rash (Amakiakia) in Plateau State

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ABSTRACT

'Kurga' and 'Amakiakia' are two common children diseases that have been claiming lives of children on the Plateau. Most parents resulted to using some plants found in the area for the treatment of these illnesses without any available data of the composition of the plants. In an attempt to establish the pharmacological rational for the traditional use of P*arkia biglobosa, Acalypha amentacea* and *Khaya senegalensis* seed oil for the effective management of several illnesses including gastroenteritis (kurga) and fungi rash (Amakiakia), the stem-bark of *Parkia biglobosa,* leaves of *Acalypha amentace*a and *Khaya senegalensis* seed oil were subjected to phytochemical screening using the standard method. This qualitative analysis revealed that Acalypha amentacea leaves contained saponins, tannins, steroids, cardiac glycosides, flavonoids and terpenes. The stem-bark extract of *Parkia biglobosa* contained saponins, tannins, cardiac glycosides and flavonoids. The *Khaya senegalenis* seed oil contains steroids, cardiac glycosides and terpenes. *Acalypha amentacea* contained most of the phytochemicals analyzed while *Khaya senegalensis* seed oil contained the least. All these plants contain bioactive compounds that could have been responsible for their pharmacological effects in the treatment of gastroenteritis (kurga) and Fungus rash (Amakiakia). The result of this study has shown that these plants can be seen as a potential source of useful drugs; a mixture of two or the three may be more effective in the treatment. Therefore, further work should be carried out on the Isolation, quantification and purification of active constituents of interest.

Keywords: Kurga, Amakiakia, Gastroenteritis, Fungus Rash, Phytochemical Screening

INTRODUCTION

Gastroenteritis (Kurga) and Fungus Rash (Amakiakia) are familiar names of illnesses among nursing mothers on the Plateau. These ailments have continued to increase child mortality in the area. Gastroenteritis (kurga) is an illness

that primarily affects children in developing countries and few of its symptoms include diarrhea, vomiting, passing greenish, watery stools three or more times within 24 hours and often times, with difficulties. The stool may contain traces of blood and mucus. Other symptoms may include nausea, high temperature, dehydration, reddish anus etc. Fungus rash, on the other hand, usually accompany gastroenteritis with some of its symptoms as; change of the colour of the child's hair and complexion of the skin at different parts of the body and at times, the body will be peeled at joins and anus. Many parents claimed that orthodox medicine could not cure these deathly sicknesses that could take the life of their children within few weeks of infection, therefore, resulted to the use of some plant's parts for the treatment of these illnesses.

Medicinal plants since times immemorial have been used in virtually all cultures as a source of medicine. The medicinal value of plants lies in some chemical substances that produce a definite physiological action on the human body. The most important of these bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds (Builder, Jarfa and Aguiyi 2012). These useful metabolites are located in the leaves (dried and fresh), bark of the stem, flowers, seed, fruit and other parts of the plant. Some of these plants include *Karkia biglobosa, Acalypha amentacea* and *Khaya senegalensis.* About 80% of individuals from developed and developing countries use traditional medicines, which has compounds derived from medicinal plants. However, such plants should be investigated to better understand their properties, safety, and efficiency (RNS and Munin, 2011; Savithramma, Linga and Suhrulatha, 2011)

Parkia biglobosa is a perennial deciduous tree of the Fabaceae family. It occurs on a wide range of natural and semi – natural communities such as open savannah woodlands, but it is most conspicuous and abundant in anthropic communities, principally bush fallow and wooded farmland where cultivation is semi-permanent. The plant has been found to possess antiplasmodial and antipyretic activities (Builders, Tarfa and Aguiyi, 2012). The stem-bark extract of *Parkia biglobosa* (Jacq)

Beroth had showed to be active against three species of shigellae (Millogo, Guissou, Nacoulma and Traore, 2007). Research on the toxicity of the plant showed that the plant is non-toxic to humans (Abioye, Akinpelu, Aiyegoro, Adegboye, Oni and Okoh, 2013). The stem-bark of the plant is boiled in water, filtered and drunk for the treatment and prevention of gastroenteristis (kurga) and Fungus rash (Amakiakia) in some parts of Plateau State.

Khaya senegalensis belongs to the maliacea family. It is found in the riparian forests and higher rainfall savannah woodlands in moist regions it's found on higher ground. The oil produced from *Khaya senegalenis* seeds, palmitic and oleic acids can serve as an alternative medicines therapy to treat a tropic dermatitis, eczema, skin cuts, itches and wounds to ameliorate the healing process. This is mostly used externally on the skin of an infant and anus for treatment and preventive therapy of gastroenteritis (kurga) and Fungus rash (Amakiakia). It is also taken orally occasionally in some few cases.

Acalypha amentacea belongs to the Euphor baceac family. Boiled leaves are used to message people suffering from fever, it can also be squeezed when soft and the juice is drunk to soothe throat infection such as Laryngitis. The Leaves are also used to treat diarrhoea, dysentery and are applied externally to relieve rheumatic pains, inflammations and swellings. The water extract of the reddish form is traditionally used to treat skin problems. The leaves is also boiled and drunk for the treatment of gastrenteristis (kurga) and Fungus rash (Amakiakia) in Plateau State.

The aim of this work is to determine the phytochemicals that are present in the plants (*Karkia biglobosa, Acalypha amentacea* and *Khaya senegalensis*.) that account for their use in the treatment of gastroenteritis (kurga) and Fungus rash (Makiakia).

METHODOLOGY

Sample Collection

Fresh leaves of *Acalypha amentacea* were collected in Jos South Local Government Area of Plateau State. The Stem-bark of *Parkia biglobosa* and seed oil of *Khya senegalensis* were both collected from Jos North Local Government Area of Plateau State.

Sample Preparation

Fresh leaves of *Acalypha amentacea* and stem-bark of *Parkia biglobosa* were both dried separately, ground and stored in clean well labeled containers.

Extraction Procedure

Aqueous cold extract of *Acalypha amentacea* and *Parkia biglobosa* were prepared according to the method described by Sofowora (1993). 200g of the ground leaf and stem-bark powder were soaked overnight in different Winchester bottles containing three (3) litres of distilled water. After 24 hrs, the extracts were filtered using a No 1 Whatman filter paper. The samples were then concentrated by drying in an oven at 60^{o}C.

Phytochemical Screening

The Phytochemical components of the extracts of *Acalypha amentacea* leaves, stem-bark of *Parkia biglobosa* and the seed oil of *Khaya senegalensis* were analyzed using the standard method of Trease and Evans as described by Sofowara (1993). The parameters determined were Tannins, saponins, alkaloid, anthraquinone, cardiac glycoside, steroid, terpenes and flavonoids.

Results and Discussion

The result of the phytochemical screening of the aqueous extract of stem-bark of *Parkia biglobosa,* leaves of *Acalypha amentacea* and *Khaya senegalensis* seed oil.

Table I

Phytochemicals	***Parkia biglobosa***	***Acalypha amentacea***	***Khaya senegalensis* Seed Oil**
Saponin	+ve	+ve	-ve
Tannins	+ve	+ve	-ve
Steroids	-ve	+ve	+ve
Cardiac Glycoside	+ve	+ve	+ve
Anthraquinone	-ve	-ve	-ve
Flavonoid	+ve	+ve	-ve
Alkaloid	-ve	-ve	-ve
Terpenes	-ve	-ve	+ve

Key: -ve = Negative
+ve = Positive

The result in Table I above indicated the presence of saponin, tannins, cardiac glycoside and flavonoid in *Parkia biglobosa* stem-bark extract. *Acalypha amentacea* leaves extract contain saponin, tannins, steroids, cardiac glycoside, flavonoid and terpenes while *Khaya senegalensis* seed oil revealed the presence of steroids, cardiac glycoside and terpenes.

Saponins have a bitter taste and have beneficial effects on the blood cholesterol levels, helps in bone health and stimulation of the immune system. It has anti – tumor and antimutagenic activities and can cause apoptosis of leukemia cells by including mitotic arrest. It also protects against viruses, bacteria and reduces bone loss. Cardiac glycosides are class of naturally drugs whole action includes both beneficial and toxic effects on the heart. Cardiac steroids are used in the modern treatment of congestive heart failure and for treatment of a trial fibrillation and flitter. Tannins have shown antiviral (Akiyaniatt, Fuji, Vamasaki, Ono and Iwatsuki, 2005). It may be employed medicinally in antidiarrhoe, hemostatic and antihemorrhoidal compounds. The anti-inflammatory effect of tannins help control all indications of gastritis, esophagitis, enteritis and irritating bowel disorders. It had been effective in protecting the kidneys. It had been used for immediate relief of sore throat, diarrhea, dysentery, hemorrhage, fatigue, skin ulcers and as a cicatrizant on gangrenous in healthy tissue. Plant steroids are types of natural organic compounds found in plants. Many types of plant steroids exist and play important roles in the biological processes of plants, such as growth and development, cell division and resistance to damage from environmental stresses like cold weather. Some plant steroids are also useful for their effects when consumed by human beings because their presence decreases the amount of cholesterol in the blood stream.

Flavonoids have been shown to have a wide range of biological and pharmacological activities in In Vitro studies. Examples include anti-allergic (Yammoto and Gaynor, 2001) anti inflammatory (Cazarolli *et al*., 2008), anti-microbial (anti-bacterial) (Cushnie and Lamb, 2011: Manner, Skagman, Goeres, Vuorela and Frallarero, 2013) anti-fungal and antiviral (Cushnie and Lamb, 2005: Friedman, 2007), anti-cancer

(Sousa, Queiroz, Souza, Gurgureira, Augustus, and Mirand, 2007) and anti – diarrheal activities (Schvier, Sies, Illek and Fischer, 2005). Flavonoids have negligible systemsic antioxidant activity and increase the antioxidant capacity of the blood. Terpenes and terpenoids are primary constituents of the essential oils of many types of plants and flowers. Essential oils are used widely as natural flavor additives for food, as fragrances in perfumery, and in traditional and alternative medicines such as aromatherapy. It is used for antiseptic and antimicrobial properties. It is also used to treat acne, skin Fungus, cold sores and other tropical infections.

CONCLUSION AND RECOMMENDATION

The result of this study has shown that these plants can be seen as potential sources of useful drugs. They can also be used as preventive medicine. A mixture of any two or three may be more effective in the treatment of both Gastroenteritis (Kurga) and Fungus rash (Amakiakia). The presence of some useful metabolite have proved the efficacy of these plants, as active principle, hence their use in the treatment of gastroenteritis (Kurga) and Fungus rash (Amakikia) in Plateau State .

Therefore, further works should be carried out in the isolation, quantification and purification of active constituents of interest so that the phytochemical potentials of these plants can be fully exploited and the safety of the plants for consumption should also be ascertained.

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