Phytochemical Screening of Aqueous Extract of *Luffa aegyptiaca* (Sponge gourd) Leave Sample from Northern Nigeria: A Short Communication

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Abstract

Aqueous extract of the leaves of *Luffa aegyptiaca* was preliminary screened with the aim of assessing the availability of some biologically active compounds. Pulverized leaves sample of *Luffa aegyptiaca* was extracted with water; the filtrate was concentrated on water bath and then air-dried at 25^{o}C. The prepared aqueous-extract was used for the phytochemical screening study which was carried out using standard methods. The phytochemicals screened from the aqueous extract of *Luffa aegyptiaca* showed positive result for flavonoids, saponins, tannins, and cardiac glycoside compounds. These compounds found in the aqueous extract of *Luffa aegyptiaca* leaves may have a wide range of biological activities which could of pharmaceutical importance.

Keywords: *Luffa aegyptiaca*, leaves, phytochemicals, aqueous-extract

1.0 Introduction

Medicinal plants have been used from ancient time for their medicinal values. Nowadays, the crude extracts samples from medicinal plants have been shown interest for the development and preparation of alternative traditional medicine [1, 2]. Plants are the best sources for chemical ingredients or phytochemical agents for cure of different diseases.

The plant; *Luffa aegyptiaca (sponge gourd)* belongs to the *Curcubitaceace* family. It is a vigorous climbing annual vine with several lobed cucumber-like leaves. The fruits were also cucumber-like shape develops at maturing, with a network of fibers surrounding a large number of flat blackish seeds. It was reported to have been originated from India [3]. It is widely distributed in tropics, subtropics as a cultivated and/or neutralized plant. In Nigeria, *Luffa aegyptiaca* is grown in all most parts of the country as weed; and it have been reported to posses both medicinal and nutritional potential [4].

It have been reported that phytochemicals which are considered as secondary metabolites components are directly responsible for activity such as antioxidant, antimicrobial, antifungal, anticancer, anti-inflammatory among others [5]. Therefore, screening of chemical constituents in medicinal plants in order to assess for their availability may provide new useful information to the scientific community and in claiming for their therapeutic efficacies. This study therefore aimed at screening chemical constituents of *Luffa aegyptiaca* leave sample from Northern Nigeria in order to provide vital information on their availability.

2.0 Materials and methods

2.1 Plant leaves sample collection and identification:

Fresh leaves of *Luffa aegyptiaca* were collected in Zaria and identified at the Herbarium Unit of the Department of Biological Sciences, Ahmadu Bello University Zaria, Nigeria.

2.2 Extraction

The leaves of *Luffa aegyptiaca* were air-dried at 25 ^{o}C for 7 days. It was then pulverized using mortar and pestle into fine powdered. The pulverized-leaves were extracted with aqueous. About 100 g of pulverized leave sample was macerated into 100 mL of water and left for 24 hrs at room temperature. It was then filtered using Whatman No 1 filter paper and the filtrate was concentrated by allowing evaporating at 50 ^{o}C on water bath and then air-dried at 25^{o}C then stored in an air-tired sterile container until used.

2.3 Preliminary phytochemical screening

The aqueous crude extract (1 g) was completely dissolved in 100 mL of distilled water. It was prepared the stock solution. The obtained stock solution was used for phytochemical screening following the methodology of Harbone and Kokate [6, 5].

2.3.1 Test for flavonoids

The stock solution (1 mL) was taken in a test tube and added few drop of dilute NaOH solution. An intense yellow colour was appeared in the test tube. It became colourless when on addition of a few drop of dilute acid that indicated the presence of flavonoids.

2.3.2 Test for Saponins

The stock solution (1 mL) was taken in a test tube and diluted with 20 mL of distilled water. It was shaken by hand for 15 min. A foam layer was obtained on the top of the test tube this foam layer indicated the presence of saponins.

2.3.3 Test for Tannins

The stock solution (3 mL) was taken in a test tube and diluted with chloroform and added acetic anhydride (1 mL). Finally, sulphuric acid (1 mL) was added carefully by the side of the test tube to the solution. A green colour was formed which showed the presence of tannins.

2.3.4 Test for Cardiac glycoside (Keller-Killani test)

About 0.5 gm of plant extract in a test tube with 2 mL of glacial acetic acid containing a drop of ferric chloride solution. This was under layered with 1 mL of concentrated tetraoxosulphate (VI) acid. Brown ring formation was observed which indicated the presence of cardiac glycosides.

3.0 Results and Discussion

The physical properties of the aqueous extract of *Luffa aegyptiaca* leaves observed were its colour (light greenish) and texture (sticky powdered). The percentage yield was 17.75%. The result for phytochemical screening showed the presence of moderate flavonoids (++), saponins (++), tannins (++), while mild cardiac glycoside (+) was obtained. The chemical constituents in the plant or crude extract are known to be biologically active compounds. Some chemical constituents are considered as secondary metabolites components. They are directly responsible for different activity such as antioxidant, antimicrobial, antifungal, anticancer among others [7, 5].

These entire secondary metabolites component showed antioxidant and antimicrobial properties through different mechanism [8]. Flavonoids have be reported as the most important bioactive compounds which exhibited a wide range of biological activities such as antioxidant, anti-inflammatory, antimicrobial, anti-angionic, anticancer and anti-alergic [5, 9]. Saponins are other type of bioactive chemical constituents which are involved in plant disease resistance because of their anti-microbial activity [10]. Tannins are phenolic compound and their derivatives are also considered as primary antioxidant or free radical scavengers [11].

Medicinal plants are the best sources for chemical ingredients, antimicrobial and antioxidant agents for cure of different disease [8]. The aqueous extract of *Luffa aegyptiaca* showed good availability of biologically active compounds and this could be a good source for pharmaceutical and nutritional utilization.

Conclusion: Aqueous extract of *Luffa aegyptiaca* leaves sample showed good availability of biologically active components which could be of pharmacological importance.

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