
PHYTOCHEMICAL SCREENING OF PAWPAP LEAF (CARICA PAPAYA) AQUEOUS EXTRACT

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ABSTRACT

The aqueous extract of Carica papaya (pawpaw) leaves were subjected to phytochemical screening for possible use in ethnoveterinary research. The secondary metabolites (component) of the extract were determined at the Toxicology Unit, Biochemistry Division, National Veterinary Research Institute, Vom for saponins, carbohydrate, alkanoids, tannins, flavonoids, anthraquinone, cardiac glycoside and resins using Thin Layer Chromatography (TLC). The result of the phytochemical screening revealed the presence of saponin, carbohydrate, alkanoid, tannins, flavonoids and cardiac glycoside among the secondary metabolic tested for and the extract was absent in anthraquinones and resins. The presence of chemical coponents in the leaves may be its reason for use in traditional medicine. It was therefore concluded that base on this discovery, the phytochemical components could be further taken for investigation in ethnoveterinary Research to develop it into drugs.

Keywords: Aqueous extract, medicinal plants, phytochemical screening, *Carica papaya* (pawpaw), chemical components.

INTRODUCTION

The African continent has long history with the use of plant for medicinal purpose. Traditional medicine was the only source of health care in Nigeria in historical times (Borokini *et al.*, 2013). Chollom, *et al.* (2012) defined medicinal plants as those plants that have medicinal properties which have been proven to be useful as drugs or contain constituents that are used as drugs. Medicinal plants are important species of plants and are useful for medicinal purpose to alleviate diseases, makes human health more invigorating. These plants are contemplated as rich source of ingredients that can be used in synthesis and production of drugs (Oladeji *et al.*, 2019). Plants consist of various kinds of chemical constituents known as phytoconstituents (Mercy *et al.*, 2017). Phytochemical screening is the scientific process of analyzing, examining, extracting, experimenting and thus identifying different classes of phytoconstituents present in various parts of plants for the discovery of drugs. Plants synthesize hundreds of chemical compounds for functions including defense against insects and diseases (Ahn., 2017). Okpara (2006) observed that chemical compounds in plants are responsible for curing different kind of diseases and they include: common sugar, alkaloid, steroid, terpernoid, tannin etc.

Plants are known to have the ability to produce and store a wide range of chemical substances. Most of these substances are secondary metabolites which are organic compounds that are not directly involved in the normal growth and development of plant against attacks from microorganisms and other predators Okpara, (2015).

Carica papaya belongs to the family caricaceace, it is also called pawpaw with potential medicinal values and has been cultivated in most of the tropical countries (Sudhakar and Vidhya 2014). From thousands of years, *Carica papaya* has been a source of medicine, in which all part of the plant such as the leaves, fruits, seeds, peel, roots, flower are used. Lydia *et al* (2016). The leaves of *Carica papaya* (pawpaw) are used traditionally in treatment of diseases in India and Australia Bergonio and Perez (2016).

The cost of obtaining veterinary drugs is at the increase and the need for alternatives. The research is to determine the phytochemical constituents of *Carica papaya* (pawpaw) leaves to advice for further investigation and research to developing it into drugs against diseases.

MATERIAL AND METHODS

Plant Collection , Authentication and Extraction

These were carried out as earlier described by (Chollom, 2012). The leaves of *Carica papaya* (Pawpaw) were collected in Mangu Local Government Area, Plateau State of Nigeria. It was identified and authenticated at the Herbarium of Federal College of Forestry, Jos (appendix 1).

Preparation of the Plant Extract

The leaves were air dried for seven (7) days, pulverized into powder using mortar and pestle and then sieved.

Two hundred and eighty grammes (280g) of the powder mixed with 4 liters of distilled water and was allowed to stay for 24 hours and was shaken at 30 minutes intervals. The extract was thereafter kept in a freezer to avoid fermentation, was then sieved using laboratory sieve with porosity of 150 microns and allowed to stand for 1½ hours to permit heavier particles to settle at the bottom of the measuring cylinder, and was transferred through Whatman's number 1 filter paper. The filtrate was transferred into an open tray and then taken into an oven (hot air oven). The oven was adjusted to 40°C for 3 days to dry. The dried sample was scraped, measured using sensitive balance and 42gm was obtained. It was then transferred into specimen container, crushed into fine powder using laboratory mortar and pestle.

Preliminary Phytochemical Analysis

The presence of phytochemical components in the extract was determined at the Toxicology Unit of Biochemistry Division of National Veterinary Research Institute (NVRI), Vom, as described by (Sofowora, 1984; Okpara, *et al.* 2006; Chollom, *et al.* 2012 and Okpara, 2015). The extract was screened for the presence of saponins, carbohydrate (what class of carbohydrates?), alkaloids, tannins, flavonoids, anthraquinones, cardiac glycosides and resins. A thin layer chromatography (TLC) was used in analyzing the components in the extract.

RESULT AND DISCUSSION

The result revealed that the phytochemical screening of aqueous extract of *Carica papaya* (pawpaw) leaves as presented in Table 1 showed presence of saponin, carbohydrate, tannins, flavonoids, cardiac glycoside and alkaloid. The leaves aqueous extract was absent in anthraquinones and resins. The presence of this components in the leaves may be the reason for its used in traditional medicine.

Table 1: Result of Phytochemical Screening of Aqueous Extract of pawpaw Leaves

Test	Inference
Saponins	+
Carbohydrate	+
Alkaloid	+
Tannins	+
Flavonoids	+
Anthraquinones	-
Cardiac glycoside	+
Resins	-

+ Presence and -Absence

The presence of saponin, carbohydrate, alkaloid, tannin, flavonoids and cardiac glycoside in the leaves of *Carica papaya* aqueous extract may be the reason for its used in traditional medicine. Which agreed with Borokini *et al.* (2013) who report, that African continent has long history with the use of plant for medicinal purpose. Okpara (2015) also states that plants synthesize chemical compounds for defense against insects and treatment of diseases. Lydia *et al.* 2016 and Bergonio and Perez 2016 observed that from thousand of years all parts of *Carica papaya* (pawpaw) has been a source of medicine. which is in agreement with Okpara (2006) that chemical compounds such as common sugar, alkaloid, steroids, terpenoids, tannin etc. in plants are responsible for curing different kind of diseases.

CONCLUSION AND RECOMMENDATIONS

The phytochemical screening of *Carica papaya* (pawpaw) leaves was carried out and from the research it could be concluded that it contain valuable source of phytochemical that could be utilize for curing diseases as it contain, saponins, carbohydrate, alkaloids, tannins, flavonoids and cardiac glycoside. The study provided an important basis for further investigation on the leaves of *Carica papaya* (pawpaw) for the development of drugs for veterinary use.

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