

## CHAPTER ONE

### Introduction

Natural product derived from plants has remained central to traditional medicine and has helped serve as sources of new drugs with good therapeutic effect and low toxicity. Unfortunately, the sleeping giant of pharmaceutical industry still has several of thousands of plants species yet to be investigated for their phytoconstituents and invariably, their biological potentials (Hamburger and Hostetham, 1991). Therefore, the need for continuous search into the phytochemicals or such plants cannot be undermined. *Nauclea latifolia* is a shrub or small tree native to tropical Africa. The leaves are glabrous, opposite, rounded-ovate, glossy green with tufts of hairs. The fruits are usually fleshy, shallow-pitched, with numerous and brownish with a pleasant taste but could be emetic if taken in excess (wu, 1993). Traditionally, the plant has been reported as an antimalarial, (Abbiw, 1990) antibacterial (wu *et al*, 1999) and antiviral, (Moral, 1994). Other potentials of the fruits include, as a laxative (Jiofact *et al*, 2010) and hypocholesterolemic (Omale *et al*, 2011). Phytochemicals such as alkaloids (Atta-ur-Rahman, 2003), saponins (Morah, 1994), tannins, oxalates, phytates (Nkafamiya *et al*, 2006) and phthalates (Fadipe, 2014) have been detected and isolated from various parts of the plant. In view of the continuous search for more phytochemicals from the leaves of *N. latifolia*, this study was conducted to investigate the antioxidant potentials in the aqueous extract of the leaves and fruits of *Nauclea latifolia* as these could be the contributing factors to their health beneficial effects.

### LITERATURE REVIEW

#### NAUCLEA LATIFOLIA

*Nauclea latifolia* is a straggling evergreen, multistemmed shrub or small tree which is native to tropical Africa and Asia. The fruits serve as a key source of food for the baboons, livestock, reptiles, birds and man. It is called "African quinine" in northern Nigeria. The Fulanis in Nigeria use the leaf extract to regularly deworm animals (Adebowale, 1993). Parts of the plant are commonly prescribed traditionally as a remedy for diabetes mellitus. The plant is also used in the treatment of ailments like malaria (Kokwaro, 1976), gastrointestinal tract disorders (Maduabunyi, 1995), sleeping sickness (Kerharo, 1994), prolonged menstrual flow (Elujoba, 1995), hypertension (Akabue and Mittal, 1982) and as a chewing stick (Asubiojo *et al*, 1982).

### BOTANICAL DESCRIPTION

*N. latifolia* is a straggling shrub or small spreading tree. It is a small deciduous soft-wooded tree with corky bark. The tree was up to 7.6m high with a large broad leaf of about 15 – 20cm. *N. latifolia* belongs to the family of Rubiaceae, the family that consists of 150 generic and 350 species of deciduous tree. It is easily identified by its compound broadleaves.

It bears an interesting flower, a large red ball with long projecting stamens. The fruit is red, edible, but not appealing.

### ORIGIN

It is a plant of the family, rubiaceae native to savannah and fringe tropical forest of west Africa (Irvine, 1961). It is wide spread in the humid and tropical rain-forests or in savannah woodlands of west and central Africa.

### TAXONOMY

Kingdom: plantae  
Phylum: Tracheophyta  
Subphylum: Euphyllophyta

Class: Angiospermae  
 Subclass: Dicotyledon  
 Order: Rubiales  
 Family: Rubiaceae  
 Genrs : Nauclea  
 Species: Latifolia  
 Common names  
 English: pin cushion tree  
 Igbo: Uburu inu  
 Yoruba: egbesi  
 Hausa: tabasiya

## ECOLOGY

African peach is a deciduous shrub or tree with an open canopy, usually branching from low down the hole. It varies widely in height from around 10 meters up to 30 metres according to soil and moisture conditions. The edible fruits is gathered from the wild for local use. Much appreciated by the local populace, it is often sold in local markets.

## PROPERTIES OF *N. LATIFOLIA*

Rhynchophylline is an interesting alkaloid with many health benefits. It is also a major constituent in Kratom (*Mitragyna speciosa*), and is also found in *N. latifolia*. The presence of psychoactive substances are indicated in the aqueous extract of the root bark of *N. latifolia*. Key constituents are indole-quinolizidine alkaloids and glycoalkaloids and saponins. The major one include nauclefine and nauclefine. A novel indole alkaloid, nauclefolinine and five known triterpenic compounds, rotundic acid, α-L-rhamnoquinovic acid, 3-O-b-D- glucopyranosyl-bisosterol, squalene and sitosterol-3-O-6'- stearoyl-b-D-glucopyranoside have been isolated from the roots of *N. latifolia* (Deeni, 1991).

## USES OF *N. LATIFOLIA*

*N. latifolia* plant is used as a tonic and fever medicine, chewing stick, toothaches, dental caries, septic mouth and diarrhoea (Lamidi *et al.*, 1995). There are studies showing that root of *N. latifolia* has antibacterial activity against gram positive and gram negative bacteria and antifungal activity (Iwu, 1993). The root of *N. latifolia* is most effective against *Corynebacterium diphtheriae*, *Streptobacillus* spp, *Streptococcus* spp, *Neisseria* spp, *Pseudomonas aeruginosa*, *Salmonella* spp (Deeni, 1991). In Congo, the roots of *N. latifolia* are used as aphrodisiac and analgesic. The roots are also used in the Congo for sexual asthenia (loss of strength). In Guinea, the roots are used as a tonic/stimulant/restorative. The stem bark is used as an aphrodisiac in Nigeria. The wood known as '*njimo*' is used as a stimulant and tonic. A soft drink is prepared from the fruit (Deeni, 1991). *N. latifolia* is also used in the treatment of ailments like malaria. (Kokwaro, 1976; Akabue and Mittal, 1982; Boye, 1990), gastrointestinal tract disorders (Maduabunyi, 1991), sleeping sickness (Kerharo, 1974), prolong menstrual flow (Elujoba, 1995), hypertension (Akabue and Mittal, 1982); jaundice, diarrhoea and dysentery.

## TRADITIONAL MEDICINE

Herbal medicine is a practice that involves the use of natural plant substances (botanicals) to treat and prevent illness. Herbal medicine is sometimes called botanical medicine or phytotherapy. Herbal medicine is the use of plant, their water or solvent extracts, essential oils, gums, resins, exudates or other

form of advanced products made from plant parts used therapeutically to provide proactive support of various physiological systems; or in a more conventional medical sense to treat, cure, prevent disease in animals or humans (Thompson *et al.*, 2009). It has medicinal use in Igbo land, the decoction of the leaves is recommended for stomach upset, especially in children. The infusion of the root is also used as a remedy for stomach upset in adults. The dose is one tea cup twice daily (Pais and Dumitrasco, 2013). The fruits is recommended for piles, dysentery, colic, pretic and menstrual disorders. The root is chewed as chew-sticks. Other ethno uses of *N.Lalifolia* include malaria, leprosy, piles, gonorrhoea, debility dyspepsia and gastro enteritis (Nikolova, *et al.*, 2013).

Traditional birth attendant in Nigeria have used the ethanolic extract of *Narclea latifolia*(stem and root) bark in arresting preterm contradictions in pregnant women. Thuterus is a hollow, thick-walled muscular organ located in the female pelvis between the bladder and rectum. (Cortis-jofreptal, 2002). It lies between the blader in front and the pelvic sigmoid colon and rectum behind, and is completely within the pelvis so that its base is below the level of superior pelvic aperture.

Natural products derived from plants have remained central to traditional medicine and has helped served as sources of new drugs with good therapeutic effect and low toxicity. Unfortunately, the (Hamburger and Hostettman, 1991) sleeping giant of pharmaceutical industry still has several of thousand of plants species yet to be investigated for their phytoconstituents and invariably, their biological potentials. Parts of the plants are commonly prescribed traditionally as a remedy for diabetes mellitus. The plant is also used in the treatment of ailments like malaria, gastro intestinal tract disorders (Maduabunyi, 1995), sleeping sickness ( Kerbaro, 1974), prolong menstrual flow (Elujoba, 1995), hypertension ( Akabre and Mittal, 1982) and as a chewing stick (Asubiojo *et al.*,1982).

## **ROLE OF TRADITIONAL MEDICINE: ITS BENEFITS AND CHALLENGES**

Despite many achievements in human healthcare in the twentiethcenturies, many of the world's population in developing countries lackregular access to affordable essential drugs. For these people, modernmedicine is never likely to be a realistic treatment option. In contrast,traditional medicine is widely available and affordable, even in remotesareas. It is important for primary healthcare delivery and the use iswidespread in developing countries (Badami *et al.*, 2003).

Traditional medicine is also cheaper than modern medicine. It issometimes the only affordable source of healthcare especially for theworld's poorest patients. In addition to its cheaper price, traditionalmedicine has a wider acceptability among the people of developingcountries than modern medicine due partly to inaccessibility of modernmedicine. But the major contributing factor is the fact that traditionalmedicine blends readily into the socio-cultural life of the people in whoseculture it is deeply rooted. Furthermore, traditional medicine remainspopular because the practitioners have wisely formed an importanteconomic contract to the mutual benefit of their practice and thepopulation they serve (Gidday *et al.*, 2003). Apart from the advantages oftraditional medicine, many problems must be tackled to maximize thepotential of traditional medicine as a source of health care (WHO, 2002).Perhaps one of the greatest arguments against traditional medicine todayis the lack of scientific proof for its efficacy. There is no thoroughscientific investigation on most of the claims made by the traditionalmedicine practitioners (Sofowora, 1993).In 1964, the OAU set up the Scientific and Technical ResearchCommission to initiate research on the proof of efficacy of medicinalplants. This initiative has greatly enhanced the development of medicinalplant research but there are challenges facing institutions conductingresearch on traditional medicine. One of the main

challenges is lack of coherent national health policies and development plans that will include traditional medical research (AACHRD, 2002). In addition, utilization of herbs may possibly expose the patient to unknown dangers (Gidday *et al.*, 2003). Other problem with traditional medicine is the criticism that traditional medicine lack hygiene and precise dosage (Sofowora, 1993).

### **TRADITIONAL MEDICINE AND DRUG DISCOVERY FROM PLANTS**

For centuries, people have used plants for healing. Until recently, plants were important sources for the discovery of novel pharmacological active compounds, with many drugs being derived directly or indirectly from plants (Cordell, 2000). Many modern drugs have their origin in the ethno-pharmacology (Badami *et al.*, 2003). A survey of pharmacopoeias of developed and developing countries was done to determine whether ethnobotanical information did indeed lead to successful drug discovery. The survey showed that from 122 compounds identified in the study, 80% of the compounds were used for the same (or related) ethnobotanical purposes. Information based on long-term use of plants by humans (ethnomedicine) likely helps to isolate safer active compounds from plants than isolating active compounds from plants with no history of human use (Lamidi *et al.*, 1995). Thus, instead of relying on trial and error, as in random screening procedures, traditional knowledge helps scientists to target plants that may be medicinally useful (Cordell, 2000). Indeed, traditional medicine is a potential source of new drugs and as a source of cheap starting products for the synthesis of known drugs. Some examples include reserpine from *Rauwolfia* species, viablastine from *Catharanthus roseus* (Sofowora, 1993).

### **ROLE OF TRADITIONAL MEDICINE: ITS BENEFITS AND CHALLENGES**

**The complete project material is available and ready for download. All what you need to do is to order for the complete material. The price for the material is NGN 3,000.00.**

**Make payment via bank transfer to Bank: Guaranteed Trust Bank, Account name: Emi-Aware technology, Account Number: 0424875728**

**Bank: Zenith Bank, Account name: Emi-Aware technology, Account Number: 1222004869**

**or visit the website and pay online. For more info: Visit <https://researchcub.info/payment-instruct.html>**

**After payment send your depositor's name, amount paid, project topic, email address or your phone number (in which instructions will sent to you to download the material) to +234 70 6329 8784 via text message/ whatsapp or Email address: [info@allprojectmaterials.com](mailto:info@allprojectmaterials.com).**

**Once payment is confirmed, the material will be sent to you immediately.**

**It takes 5min to 30min to confirm and send the material to you.**

**For more project topics and materials visit: <https://researchcub.info/> or For enquiries: [info@allprojectmaterials.com](mailto:info@allprojectmaterials.com) or call/whatsapp: +234 70 6329 8784**

**Regards!!!**