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Pharmacopoeia Medicinal Plant Materials of Nigeria Which Is Used For Medicine and Pharmacy

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Abstract: medicinal plants are the backbone of traditional medicine (Ahvazi et al., 2012), the same can be said for modern medicine. This study represents an attempt to raise awareness of medicinal plants indigenous to Nigeria as documented in the West African Herbal Pharmacopoeia and the African Herbal Pharmacopoeia. Monographs of these pharmacopoeia were analyzed, discussed and present visually. Among the identified plant species in the pharmacopoeia, Fabaceae family has the largest amount of plant species. Leaves being the most utilized medicinal plant material, with anti-inflammatory effect being prevalent among the medicinal plants studied.

Keywords. [Monograph](#), [Nigeria](#), [Pharmacopoeia](#), [Plants](#), [Ukraine](#), medicinal.

Introduction

A Medicinal plant is defined as a plant that possesses substances within one or more of its organs, capable of being utilized for therapeutic applications or serving as precursors for the synthesis of beneficial drugs (Sofowora et al., 2013).

In developing nations, like Africa, traditional medicine (TM), is deeply ingrained within their spiritual and cultural belief system (Amaeze et al, 2020) and in Nigeria, a wide variety of these traditional medicinal plants and materials are found, these plants have been used in healthcare since time immemorial, each playing a significant role in various aspect of human lives.

According to the World Health Organization, TM is the sum total of all knowledge and practices, whether explicable or not, used in health maintenance, also in diagnosis, prevention and elimination of physical, mental, or social imbalance and rely exclusively on practical experience (Che et al., 2017)

The West African Health Organization (WAHO) launched the second edition of the West African Herbal Pharmacopoeia in 2020 (WAHP, 2020).

This study represents an attempt to create valid awareness on the medicinal plants found & grown in Nigeria, that has become of relevance in the West African region and has become of great usefulness to both urban and rural dwellers.

Aim

The aim of this study is to conduct a thorough analysis of monographs from active African herbal pharmacopoeia, focusing on medicinal plants material which are permitted for medicinal used and common in Nigeria.

Materials and Methods

In this study, we employed two significant pharmacopoeia – The West African Herbal Pharmacopoeia (WAHP) and the African Pharmacopoeia (AP) (African pharmacopoeia Vol.1, 2nd

edition). The primary objective was to examine monographs of medicinal plants contained within these pharmacopoeias.

The structure of monograph of the WAHP, AP are similar to that of the State pharmacopoeia of Ukraine (SPhU) (State Pharmacopoeia of Ukraine vol.3, add.1-5), but with significant differences. The SPhU contains the name of the medicinal plant (Ukrainian, Latin and English), description of the plant, content (a brief explanation of the biological active substances), Identification (A- Macroscopic analysis, B- Microscopic analysis, C- Thin layer chromatography), Tests (Adulterant, weight on loss of drying, total ash etc.), and quantitative determination.

The WAHP has these same features as the SPhU. The features that differentiate these pharmacopoeias are the pharmacological actions, therapeutic indications, geographic distribution, dosage, and the storage conditions of these medicinal plants.

Results

Information from the traditional overview of medicinal plants (Monier, 2016) were analyzed and this study shows that 325 species and 95 families are recognized and used for the treatment of various diseases. Cumulatively, in the West African Herbal pharmacopoeia and African pharmacopoeia, there are “226” plant monograph present. And amongst this, only 50 plants which are confirmed

to be found and grown in Nigeria are analysed in this study.

Our analysis delved into several aspects of these medicinal plants. Firstly, we explored the botanical families to which they belong (Fig. 1).

This graph gives us a glimpse into the families of medicinal plants found in Nigeria. There are 31 different plant families.

Notably, the Fabaceae family stands out as the leader, having a significant number of 11 medicinal plant species. This emphasizes its importance in providing plants that are used for medicines or as supplements in food.

Following closely are the Euphorbiaceae, Poaceae, Apocynaceae, Solanaceae, Liliaceae, and Sterculiaceae families, each having 4, 3, 3, 3, 3, and 2 medicinal plant species, respectively. The Lamiaceae family is also worth mentioning, contributing 2 plant species in this context.

Additionally, we examined the specific plant parts utilised – medicinal plant materials (MPM), shedding light on the diverse components integrated to traditional and medicinal practices (Fig. 2).

As a result of this analysis, we observed that in terms of usage, leaves has the highest value amongst other MPM, with a margin of 29%. Following leaves, roots accounted for 17%, while fruits constituted 11% of usage, ranking second and third, respectively.

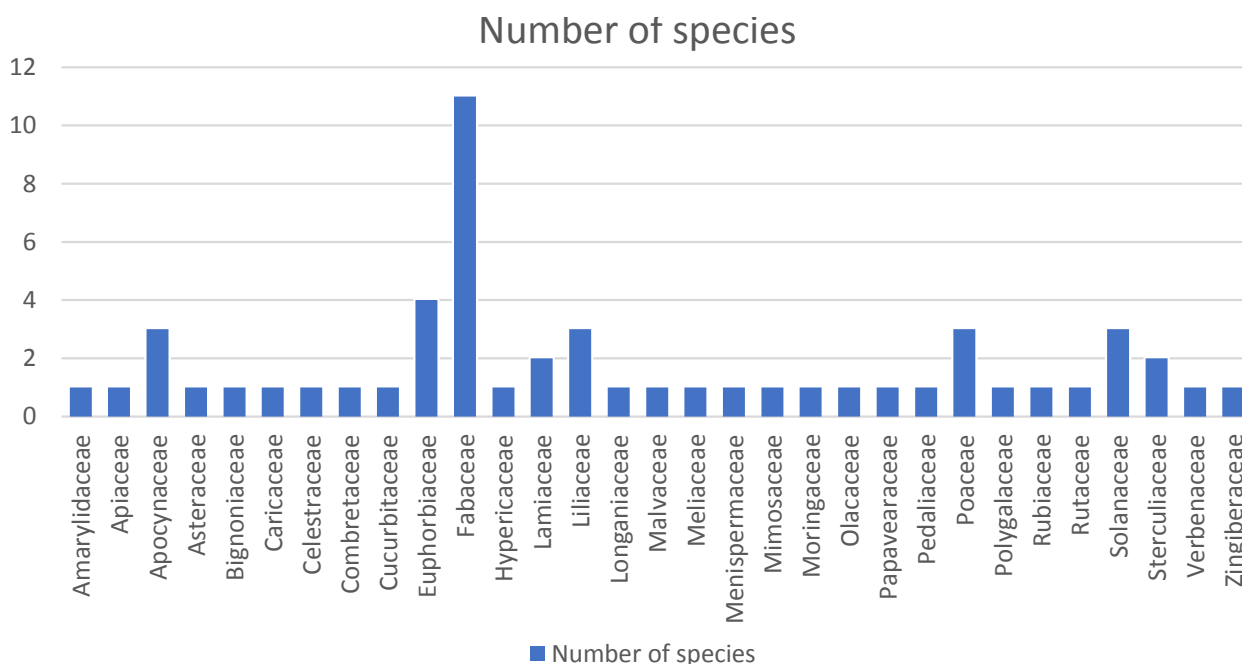


Figure 1. Family of Plant materials which are present in pharmacopoeias

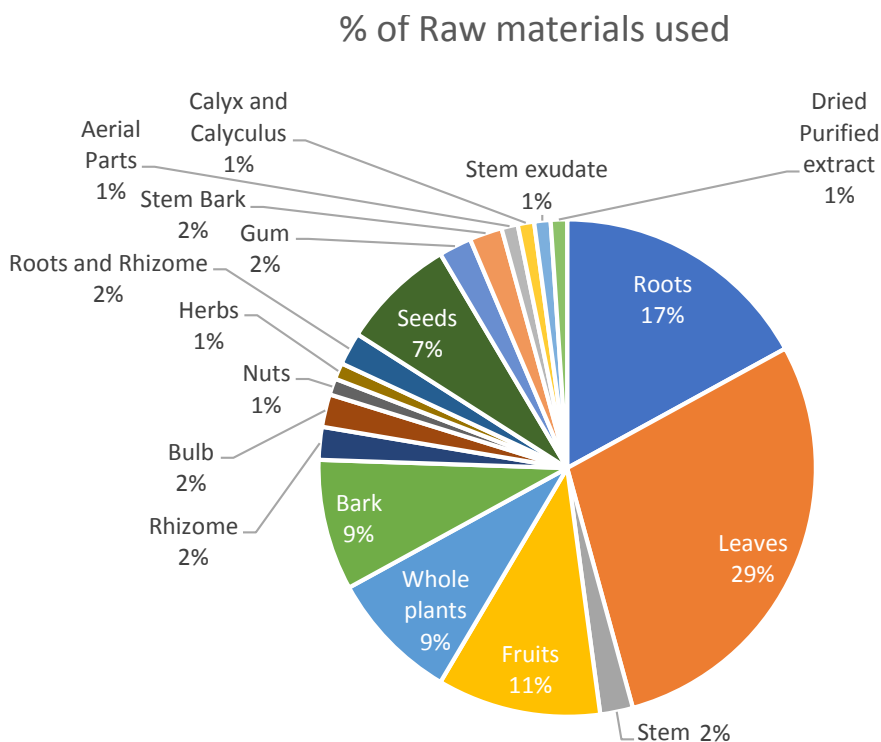


Figure 2. Medicinal Plant materials of each plant which are present in pharmacopoeias

Both bark and whole plants each have a value of 9%, and seeds with 7% usage. There is also a noteworthy observation of the utilization of MPM like stem exudate, calyx and calyculus, dried purified extract, although in lesser amounts.

Furthermore, our investigation extended to the pharmacological actions associated with these medicinal plants, by understanding the potential therapeutic effects of each plant (Fig. 3).

Each plants had a minimum of four or more various pharmacological actions.

In the leading position is anti-inflammatory action, which has a value of 9%. This indicates that there is a prevalent trend among the majority of plants, showing their efficacy in fighting inflammation within the human body.

Following closely with a difference of 1%, are antibacterial, antimicrobial, and analgesic effect, each accounting for 8%, respectively. Some medicinal plants with a value of 6% exhibit anti-malarial effect, while antipyretic, antioxidant and antifungal effect are associated 5% of these medicinal plants, individually. Other pharmacological actions like laxative, diuretic, carminative, etc all take up 4% and 3%.

Taking into account that there are a few unique pharmacological actions that only take up 0% of the chart, hence exempted from the chart, like antiplatelet effect, muscle relaxant, cholagogue, anti-neoplastic, antihyperglycemic, etc. This is because only one of different medicinal plant exhibited these actions.

Discussions and Conclusions

This distribution highlights the rich variety of botanical resources in Nigeria that serve for medicinal purposes or as nutritional supplements. But there is poor or no representation of most of these 325 medicinal plants in the pharmacopoeias.

As a result of this analysis, it becomes evident that amongst the botanical families of medicinal plants in Nigeria, according to the pharmacopoeia used, the *Fabaceae* family stands out prominently. It emerges as the family with the highest number of medicinal plants associated with it. Bearing in mind that *Fabaceae* family is one out of many other botanical families in Nigeria.

Furthermore, leaves, roots and fruits are the most widely utilized medicinal plant material in Nigeria, with values of 29%,17% and 11%, respectively.

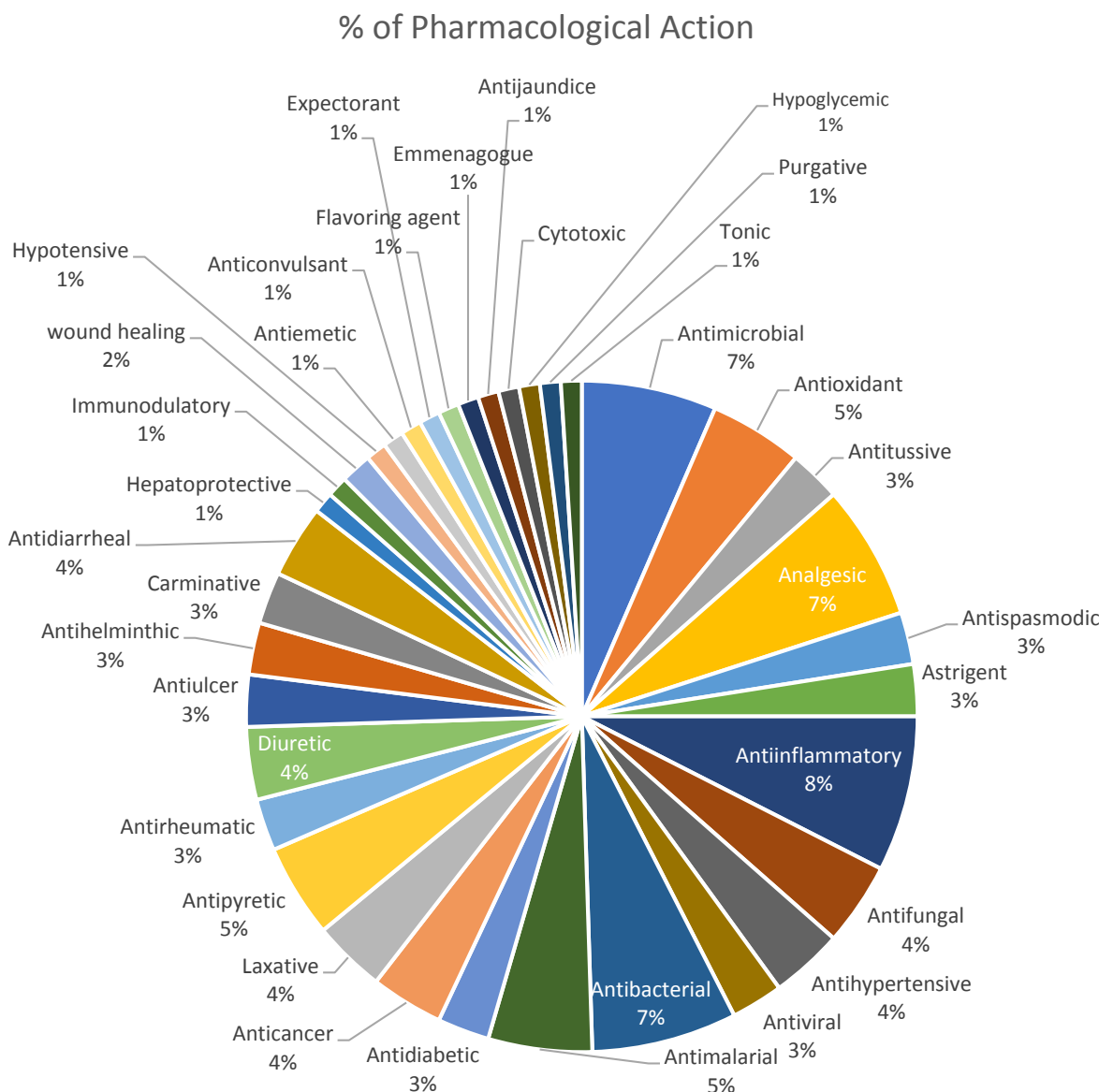


Figure 3. Pharmacological actions of each plant which are present in pharmacopoeias

Also, there are 49 different pharmacological actions mentioned and visually represented, with some having 0% value which is impossible, but this is the case because most plants that exhibit these actions were not recorded or documented in the pharmacopeia.

The obtained result shows that there is a need for detailed documentation, like monographs in pharmacopoeia, especially on medicinal plants not mentioned, their families like *Polygonaceae*, *Acanthaceae*, etc, their MPM, pharmacological actions which are not widely represented i.e. those with 0% value, and other relevant information on the common medicinal plants in the Nigeria.

This published document will ensure easy access, will provide awareness about the availability and rich biodiversity of medicinal plants in Nigeria.

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This study did not receive external funding.

Conflict of interest

There is no conflict of interest in this article. No rewards received.

Consent to publication

All authors of the article are acquainted with the final version of the manuscript and have no objections to its publication. The article does not use personal data and information about patients.

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Фармакопейна лікарська рослинна сировина Нігерії, яка застосовується в медицині та фармації

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Анотація. Лікарські рослини є основою традиційної медицини (Ahvazi et al., 2012), те саме можна сказати і про сучасну медицину. Наше дослідження являє собою спробу підвищити обізнаність про лікарські рослини, поширені в Нігерії, монографії яких входять до складу Західноафриканської трав'яної фармакопеї та Африканської трав'яної фармакопеї. Монографії цих фармакопей були проаналізовані, обговорені та представлені наочно. Серед ідентифікованих видів рослин у фармакопеї родина Fabaceae має найбільшу кількість видів рослин. Листя є найбільш використовуваним лікарським рослинним матеріалом; серед досліджуваних лікарських рослин переважає протизапальний ефект.

Ключові слова: монографія, нігерія, фармакопея, рослини, лікарські, Україна.



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