

PDF - NUTRITIONAL PHYTOCHEMICAL AND MICROBIAL CONTENT OF BOMBAX COSTATUM LEAVES - researchcub.info **CHAPTER ONE**

**1.0. INTRODUCTION:**

Plants have been an important source of medicine for thousands of years. Even today, the World Health Organization (WHO) estimates that up to 80% of people still rely primarily on traditional remedies such as herbs for their medicines. The medicinal value of these plants is due to the presence of a variety of phytochemicals and their elemental composition. The role of medicinal plants in disease prevention or control has been attributed to the antioxidant properties of their constituents, usually associated with a wide range of amphipathic molecules that are broadly referred to as polyphenolic compounds. There is a growing interest in the development and evaluation of natural antioxidants from medicinal plant materials in the food industry and the field of preventive health care. Among those herbs, one promising species is *Bombax costatum* leaves, which is native to the sub-Himalayan regions of Northwest India. It is widely distributed throughout Africa, Saudi Arabia, Southeast Asia, the Caribbean Islands, and South America. Every part of *Bombax costatum* leaves has medicinal properties and is commercially exploitable for the development of medicinal and industrial by-products.

Traditionally, the leaves, fruits, flowers, and immature pods of this tree are edible; they are used as a highly nutritive vegetable in many countries, particularly in India, Pakistan, the Philippines, Hawaii, and some African nations. In developing nations, *Bombax costatum* leaves is used as an alternative to imported food supplements to treat and combat malnutrition, especially among infants and nursing mothers, by virtue of its chemical constituents.

Several valuable reviews of the ethno botanical uses of *Bombax costatum* leaves are available. It has been found to be a good source of polyphenols and antioxidants. Phytochemicals such as vanillin, omega fatty acids, carotenoids, ascorbates, tocopherols, beta-sitosterol, moringine, kaempferol, and quercetin have been reported in its flowers, roots, fruits, and seeds. The leaves, in particular, have been found to contain phenolics and flavonoids; these compounds have various biological activities, including antioxidant, anticarcinogenic, immunomodulatory, antidiabetic, antiatherogenic, and hepatoprotective functions and the regulation of thyroid status. Moreover, leaves contain trace elements that are essential to human health. For instance, magnesium, iron, selenium, and zinc play an important role in metabolism, and interest in these elements is increasing together with reports relating trace element status and oxidative diseases. However, a recent study has shown that dried *Bombax costatum* leaves contain lead at very high values of 352.0?mg/L. Therefore, it is very important to identify the mineral composition of *Bombax costatum* leaves that are widely consumed by humans and animals.

In Mexico, *Bombax costatum* leaves are widely cultivated in different zones of the country and are found in more than ten states from Sonora to Oaxaca on the Pacific side. Few studies have been conducted on nutritional and phytochemical composition; however, to date, a detailed composition of the leaves of *Bombax costatum* leaves that is native to Mexico has not been reported yet. In addition, it is important to bear in mind that the mineral and phenolic contents present in leaves depend on several factors such as geographical area where the plant is cultivated, type of soil, water and fertilizers, industrialization process, and storage conditions.

**1.1. STATEMENT OF PROBLEM:**

The following forms the statement of problem of study of this research work;

A major setback in the commercial utilization of African herbs is the lack of adequate and consistent data. Most of the published data collected on the nutritional, phytochemicals and microbial inhibitory content of *Bombax costatum* leaves, are at variant from each other.

Also, lack of information on the properties of the leaves has led to no processed products from the leaves. Efforts made so far to optimize the economic and to a lesser extent the nutritional value of the leaves have emphasized its microbial and phytochemical content have largely ignored how other components, especially the herb properties could also be utilized to supplement the medicinal needs of the consumer. Most studies aimed at fortifying limited knowledge towards the leaves application medicinally have been discouraged due to its inherent microbial content.

### **1.2. AIM OF THE STUDY:**

The aim of this study was to evaluate the phytochemical, nutritional and microbial inhibitory content present in *Bombax costatum* leaves grown in Nigeria with a little trace of its inherent medicinal constituents.

### **1.3. OBJECTIVES OF THE STUDY:**

At the end of the research work, the researcher expects to achieve the following objectives;

- Improve the general awareness of the nutritional, phytochemicals and microbial content of the leave under study

- Throw more light towards the medicinal application of the leave.

- Elaborate the phytochemical content of the leave

- Show practically how the Nutritional and phytochemical content of the leave can be used medicinally.

### **1.4. 1.4. AIM OF THE STUDY:**

This research work is aimed at investigating successfully the Nutritional, phytochemicals and microbial inhibitory content of *Bombax costatum* leaves in the laboratory. To effectively achieve this, a step by step rudiments was ensured in where the Nutritional, phytochemicals and microbial content was first ascertained as well as the properties.

### **1.5. SIGNIFICANCE OF THE STUDY:**

It is expected that at the end of this research work, the researcher will have been able to express the nutritional, phytochemical and microbial content of *Bombax costatum* leave. Knowledge of this tree leave will enhance and broaden people's perceptive of it and its inherent applications.

### **1.6. LIMITATION OF THE RESEARCH:**

Although the aim of the work was achieved, the research work was faced with lot setbacks especially during the practical aspect. It was discovered the necessary materials and reagents needed to effectively carry out the practical work was limited coupled with the limited time frame given for the research work.

### **1.7. SCOPE OF THE STUDY:**

The research details presented here only shows the Nutritional, phytochemicals and microbial inhibitory content of *Bombax costatum* leaves with a little introduction of its medicinal uses and implications.

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