



Preliminary pharmacognostic and phytochemical investigation of *Ensete superbum* (Roxb.) Cheesman (Musaceae)

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Abstract

A pharmacognostic study of *Ensete superbum* (roxb.) Cheesman was performed on sample collected from dense forests of Sirwel hills, district Kargone (M.P.). Evaluation of the crude drug was conducted according to the World Health Organization (WHO) guidelines for herbal standardization. Microscopic examination of the powdered drug revealed the presence of parenchyma and fiber cells of the medullary ray. The contents of foreign matter, acid-insoluble ash and total ash determined were 0.12%, 3.04% and 15.0% respectively, whereas the ethanol-soluble extractive and water-soluble extractive values were found to be 4.08% and 5.68 %. Preliminary phytochemical screening of *Ensete superbum* (roxb.) Cheesman was also studied. First of all plant was undergone extraction process by using various solvents like Hexane, Benzene, Ethanol, water respectively. After the extraction process phytochemical screening was carried out for identification of various active constituents in which it was found that the Ethanol extract gave more constituents than other which are carbohydrates, alkaloids, phenolic compounds and terpenoids.

Keywords: *Ensete superbum*, Ethanol, Hexane, Medullary ray, Parenchyma, WHO

Introduction

Plants have been used as folk remedies and for centuries, the ethno-botanical literature has described the usage of plant extracts, infusions and powders for diseases now known to be of viral origin. The ethnopharmacology provides an alternative approach for the discovery of antimicrobial agents, namely the study of medicinal plants with a history of traditional use as a potential source of substances with significant pharmacological and biological activities (Ambasta, 1992). Herbal preparations are more frequently used to prevent and treat several diseases in world. In developing countries, the World Health Organization (WHO) estimates that about 80% of the population relies on plant based

preparations used in their traditional medicinal system and as the basic needs for human primary health care (WHO, 2000). In recent years, there is a need to study the plants having different values in their medicinal properties. Therefore, several medicinal plants have been evaluated for possible activity and potential cure from a variety of ailments (Evans, 1996).

The traditional methods, especially the use of medicinal plants, still play a vital role to cover the basic health needs in the developing countries too and moreover the use of herbal remedies has increased in the developed countries in the last decades. In this connection, plants continue to be a rich source of therapeutic agents. The remarkable contribution of plants to the drug industry was possible because of the large number of phytochemical and biological studies all over the world. The Indian subcontinent is endowed with rich and diverse local health tradition, which is equally matched with rich and diverse plant genetic source. A detailed investigation and documentation of plants used in local health traditions and ethno-pharmacological evaluation to

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verify their efficacy and safety can lead to the development of invaluable herbal drugs or isolation of compounds of therapeutic value.

Materials and Method

Materials: Sample of *Ensete superbum* (Roxb.) Chessmen were collected from forest of Sirwel.

Method: Macroscopic and microscopic properties, and constant numbers due to quality of *Ensete superbum* Roxb. were examined following the standard methods of the WHO (2000).

Macroscopic and microscopic examination-Each sample of *Ensete superbum* Roxb. was identified. For microscopic examination, the powdered sample was inspected under a microscope equipped with a micrometer.

Determination of foreign matter-The sample was spread in a thin layer and the pieces of foreign matter were sorted out by visual inspection. All portions of the foreign matter were weighed.

Determination of total ash-The ground sample was placed in a previously ignited and tared crucible. The sample was ignited by gradually increasing the temperature until white ash was obtained. The ash was then cooled in a desiccator and weighed without delay.

Determination of acid-insoluble ash-To the crucible containing the total ash was added hydrochloric acid. The crucible was then covered with a watch-glass, and the mixture was boiled gently, watch-glass was rinsed with hot water, and this liquid was added into the crucible, insoluble matter was collected on ashless filter-paper, washed and to constant weight. The residue was weighed without delay.

Determination of ethanol-soluble extractive-The ground sample was macerated with absolute ethanol. The filtrate was evaporated to dryness and then dried with heat to constant weight.

Determination of water-soluble extractive- The ground sample was macerated with distilled water in a closed conical flask. The extract was filtered, and the filtrate was evaporated to dryness.

Plant Extract Preparation- The collected plants were dried and powdered. These powders were then subjected to successive extractions by various solvents of gradual increasing polarities.

Preliminary Phytochemical and Pharmacognostical Screening- The preliminary phytochemical studies were carried out following the methods of Raman (2006) and Kokate *et al.* (2003). The plant extracts were screened for the presence of alkaloids, proteins, free amino acids, anthraquinones glycosides, flavonoids, tannins, phenolic compounds, carbohydrates, saponins, phytosterol and triterpenes. The pharmacognostical investigations were conducted in terms of fluorescence analysis. Physico-chemical parameters such as total ash, water-soluble ash, acid insoluble ash and loss on drying were determined.

Results and Discussion

Preliminary Phytochemical Screening- The results of preliminary phytochemical screening of hexane, benzene, ethanol and water extracts of *Ensete superbum* (Roxb.) Chessmen are presented in Table 1. While the results of Preliminary Pharmacognostic studies are shown in Table 2. The pharmacognostic investigations on physico-chemical characteristics and fluorescence analysis shows that authentic botanical of this crude drug prevents adulteration, substitution and has a crucial role in standardization of crude drugs. The preliminary phytochemical screening of the leaves of *Ensete superbum* (Roxb.) Chessman indicates the presence of secondary metabolites, having an essential role in medicine. Overall, the present study indicates phytochemical and pharmacognostical investigation on *Ensete superbum* (Roxb.) Chessman. This study paves the way for further attention/research to identify the active compounds responsible for the plant biological activity.

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Table1: Phytochemical screening of hexane, benzene, ethanol and water extracts of *Ensete superbum* (Roxb.)

Data for Phytochemical Screening																	
Constituents	Leaf				Root				Rhizome				Pseudostem				Plant Juice
	Hexane	Benzene	Alcohol	Water	Hexane	Benzene	Alcohol	Water	Hexane	Benzene	Alcohol	Water	Hexane	Benzene	Alcohol	Water	
Alkaloid	+	+	+	+	+	+	+	+	+	+	+	±	+	±	+	-	+
Carbohydrate	-	+	+	+	±	±	+	+	±	-	±	±	-	-	+	+	+
Glycoside	±	±	-	±	±	-	-	-	-	-	-	-	±	±	+	±	±
Saponines	-	+	+	+	+	+	+	+	+	+	-	+	-	-	+	+	+
Proteins	±	+	±	±	±	±	+	±	+	-	±	+	±	±	±	±	±
Amino acid	-	-	+	+	-	-	-	+	-	-	-	+	+	-	+	+	+
Steroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fixed oils & fats	+	+	±	-	±	±	±	±	±	±	-	±	-	±	±	±	-
Phenolic Compounds	-	+	±	±	+	+	+	+	+	-	-	+	+	+	+	-	+
Gum and mucilage	-	-	-	-	+	+	+	+	+	+	-	+	+	-	-	+	-

(±) : Partial presence, (+) : Present, (-) : Absent

Table 2: Data Table for Pharmacognostic study

S. No.	Evaluated Parameter	Yield (%)
1.	Foreign matter	0.12
2.	Total Ash value	15
3.	Acid insoluble ash value	3.04
4.	Alcohol soluble extractive value	4.08
5.	Water soluble extractive value	5.68

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