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PHYSICOCHEMICAL CHARACTERIZATION OF BARK OF *STERIOSPERMUM SUAVEOLENS*(ROXB) DC.

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ABSTRACT

Steriospermum *suaveolens* DC (Bignoniaceae) commonly known as "Padari". It is widely available in India. Traditionally it is used as analgesic, wound healing, anti dyspeptic, astringent and liver stimulant. The aim of the present study is to evaluate physicochemical parameters of bark of *Steriospermum suaveolens* which includes physico-chemical constant, phytochemical screening and fluorescence analysis. The total ash content of the bark powder is 95% and the extractive value of water is more than other solvents. The bark powder shows the characteristics fluorescent colour when treated with 50% H_2SO_4, Alcoholic NaOH and picric acid under UV light. The methanol extracts shows the presence of catechin, flavanoid, phenol, quinine, saponin, steroid, terpenoid, sugar and glycoside. These findings will be useful towards establishing pharmacognostic standards on identification, purity, quality and classification of the plant, which is important in plant drug research.

KEYWORDS: Pharmacognosy, physico-chemical, phytochemical, Steriospermum *suaveolens.*

INTRODUCTION

Medicinal plants have been identified and used throughout human history. Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions.. At least 12,000 such compounds have been isolated so far; a number estimated to be less than 10% of the total.[2][3] Chemical compounds in plants mediate their effect on the human body through processes identical to those already well understood for the chemical compounds in conventional drugs; thus herbal medicines do not differ greatly from conventional drugs in terms of how they work. This enables herbal medicines to have beneficial pharmacology, but also gives them the same potential as conventional pharmaceutical drugs to cause harmful side effects.[2][3] The use of herbs to treat disease is almost universal among non-industrialized societies and is often more affordable than purchasing modern pharmaceuticals. The World Health Organization (WHO) estimates that 80 percent of the population of some Asian and African countries presently use herbal medicine for some aspect of primary health care. Studies in the United States and Europe have shown that their use is less common in clinical settings, but has become increasingly more common in recent years as scientific evidence about the effectiveness of herbal medicine has become more widely available. The annual global export value of pharmaceutical plants in 2011 accounted for over US$2.2 billion.[6] *Steriospermum suaveolens* DC (Bignoniaceae) commonly known as "Padari". It is widely available in India. Traditionally it is used as analgesic, wound healing, anti dyspeptic, astringent and liver stimulant.

MATERIALS AND METHODS

Plant collection and authentication

The bark of the tree was collected from our college campus. The bark was collected, shade dried, powdered in mechanical pulverized and stored in air tight containers for future use.

Determination of Physicochemical Parameters

Total ash value, water and acid, soluble and insoluble ash value, and moisture content were determined as per Indian pharmacopoeia.[9, 10]

Fluorescence analysis

The fine powders of the samples were examined under visible light and UV light (254nm and 365mm). These powders were also treated with acid, alkali and alcohol and changes in colour were recorded under visible and UV-light.[11]

Determination of extractive value

The powdered bark was successively extracted with methanol, chloroform, hexane, pet ether and water in a soxhlet apparatus. The extracts were evaporated using a rotary evaporator and water extract with a freeze dryer. The residues were weighed.

Preliminary phytochemical analysis

The preliminary phytochemical analysis of the methanol, chloroform, hexane, pet ether and water extracts were carried out using standard methods. The presence and absence of the secondary phytoconstituents were noted.[12, 13]

RESULT AND DISCUSSION

To ensure the quality of herbal products, proper control of starting material is utmost essential. Various techniques are used for the standardization of medicinal plants of therapeutic potential. Water –soluble ash is the water soluble portion of total ash. Acid –insoluble ahs indicates the non – physiological ash, due to adherence of inorganic dust, dirt to the crude drug. The ash values of the crude drug signify the presence or absence of adulteration. The extractive values in different solvents indicate the nature of phyto constituents from the crude drug and their solubility in a given solvent .Normally alcohol and water are used as the pharmacopoeias .Many phytoconstituents exhibits the fluorescence phenomenon which can been seen with specific reagents or solvents. The fluorescence colour is specific for each compound.

The plant material was subjected to preliminary phytochemical screening by different chemical test for qualitative determination of phytoconstituents present in plant drug.

Table 1: Determination of Ash Values

Parameters	Ash Value (%) 'bark sample
Total Ash value	95 %
Acid insoluble ash	94 %
Water soluble	93 %
Sulphated Ash	94 %

Table 2: Extractive values.

Parameters	Ash Value (%) bark sample
Total Ash value	95 %
Acid insoluble ash	94 %
Water soluble	93 %
Sulphated Ash	94 %

Table 3: Fluorescence Analysis of bark powder of *Steriospermum suaveolens.*

Sample	Bark Powder		
	Visible light)	UV (254nm)	UV (365nm)
Powder	Brown	Pale green	Dark green
Powder+1NH cl	Brown	Blackish brown	Green
Powder+HNO3	Dark brown	Green	Pale brown
Powder Picric acid	Yellowish brown	Fluorescent green	Dark brown
Powder+50% sulphuric acid	Pale brown	Fluorescent green	Blackish brown
Powder+ Aqueous NaOH	Brown	Blackish brown	Dark brown
Powder+ Alcoholic NaOH	Dark brown	Fluorescent brown	Reddish brown
Powder+Nitric acidwith NH3	Pale brown	Dark brown	Brown
Powder+Acetic acid	Pale brown	Dark brown	Brown
Powder+Ferric chloride	Yellowish brown	Dark green	Pale brown

Table 4: Phytochemical screening of bark powder of *Steriospermum suaveolens*

Phytochemical Test	Bark sample				
	Methanol	Chloroform	Pet	Water	Hexane
Alkaloids	+	-	-	+	-
Anthraquinones	-	-	-	-	-
Catechin	-	+	-	+	-
Coumarins	+	-	-	+	-
Flavonoid	+	-	-	-	-
Phenols	+	+	+	+	+
Quinones	-	+	+	+	+
Saponin	-	+	-	-	-
Steriod	+	-	-	-	-
Tannins	-	-	+	-	+
Terpenoids	+	-	-	+	-
Reducing sugar	+	+	+	+	+
Glycosides	+	+	+	+	+
Xanthoprotien	-	-	-	+	-
Fixed oil	-	-	-	-	-

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