

STUDIES OF PHARMACOGNOSTICAL PROFILES OF ADANSONIA DIGITATA linn.

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ABSTRACT:

The macroscopic characters of the whole plant, physical constant values, extractive values, preliminary phyto-chemical tests, fluorescence characters under ultra-violet light after treatment with different reagents of the powdered leaves from the tree of Adansonia digitata linn., [Bombacaceae] were studied to fix some pharmacognostical parameters. Preliminary phytochemical screening on the methanolic extract of the plant was also performed. These studies will help in identification of this plant for further research.

INTRODUCTION:

Adansonia digitata Linn., [family Bonbacaceae] Synonym: monkey bread tree Linn., is a medium sized tree with a comparatively short bole and spreading branches. The bark is smooth, grayish frequently with a purple tinge or brown. The flowers hang solitary on long auxiliary peduncles and are white, 20 cm in length and pendulous. The seeds are reniform lustrous brown or black with thick testa. The calyx is 5 lobed. Outer surface of calyx is soft, hairy and the inner surface is silky. The plant is called as Anaipuliamaram [Tamil], Baobab tree {English}, Gorakamali [Hindi], Gangerukie [Sanskrit], Sima chinta [Telugu] in Indian traditional medicine.

The leaves of Adansonia digitata is found in the savannas of Africa and India, mostly around the equator, very commonly in Andhra Pradesh and also cultivated in Uttar Pradesh, Bihar, Tamilnadu and Maharashtra^{1,2}. The leaves of this plant are said to possess diaphoretic, diuretic,

astrigent and antiarrhythmic properties. Also the leaf is used as an emollient and antioxidant³. Considering its various therapeutic efficacy and usage in traditional medicinal practice it was through desirable to investigate some pharmacognostical parameters for further identification of the active plant material. The present investigation dealing with the studies on some important pharmacognostical profiles of the whole plant and its powdered form is being reported here.

MATERIALS AND METHODS:

PLANT MATERIALS:

Whole plants of Adansonia digitata, Linn., were collected from chepauk stadium, Chennai during the month of March 2004. The taxonomical identification of the plant was done by Prof.P. Jayaraman, Director Medicinal Plant research unit, Chennai. The collected leaves were dried under shade.

The dried materials were powdered by means of mechanical grinder and the powder was allowed to pass through sieve No. 40 for powder analysis and the coarse powder was used for extraction.

REAGENTS:

All the reagents were of analytical grade and obtained from S.D.Fine Chemical Ltd., Mumbai.

METHODS:

The macroscopic characters (colour, odour, taste, size, shape, surface texture) of the plant were observed⁴. The extractive values were determined successively starting from petroleum ether (60° to 80°C), chloroform, benzene, methanol and water. The physical constant values were determined by following Pharmacopoeial methods⁵. Preliminary phytochemical tests for different extracts were performed by using specific reagents⁶ and the fluorescence characters were observed under ultra-violet light at 254nm.

RESULTS AND DISCUSSION:

The macroscopical characters are shown in (Table 1). The extractive values and total ash, acid insoluble ash, water soluble ash, sulphated ash and loss on drying are

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reported in (Table 2&3). Phytochemical screening is reported in (Table 4). The aqueous extract shows the maximum yield. It was observed that the methanol and aqueous extracts of the leaves of the powdered drug contain Glycosides, Phytosterols, Saponins, protein and amino acid, phenolic compounds and tannins, Gums, Mucilage and Flavanoids. The fluorescence characters under ultraviolet light are shown inTable (5&6). The results obtained can help in authenticating the sample and its powder form for further research purposes prior to its use in any formulation.

CONCLUSION:

The studies of *Adansonia digitata* Linn., relating to macroscopical characters, physical constant values, extractive values, phytochemical screening of different extracts of the plant and fluorescence characteristics will help in proper identification of the plant as a whole and its powder form for future studies.

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Table 1- Macroscopical characters of *Adansonia digitata*, Linn.,

Colour	The fresh plant is greenish in colour with whitish purple colour stem with white flowers. The seeds are lustrous brown with thick testa.
Shape	Leaves: obovate, oblong(or) lanceolate Flowers: petals are white Seeds: reniform
Size	Leaves:5cmx12cm
Odour	Odourless
Texture	Smooth
Taste	Mucilaginous

Table 2 – Extractive values of *Adansonia digitata*, Linn.,

Solvent	%of yield	Colour of extractive
Petroleum ether (60°to80°)	7.18%	Dark green
Chloroform	4.4%	Dark green
Benzene	1.57%	Dark green
Methanol	9.86%	Dark green
Water	27.67%	Dark Brown

Table 3 – Physical constant values of *Adansonia digitata*, Linn.,

Constants	Yield in percentage (w/w)
Total ash	20.16%
Acid insoluble ash	2.99%
Water soluble ash	3.40%
Sulphated ash	4.50%
Loss on drying	14.30%

Table 4- Preliminary phytochemical tests for different extracts of Adansonia digitata Linn

S.No	Plant constituents	Petroleum ether extract	Chloroform extract	Benzene extract	Methanol extract	Aqueous extract	Drug Powder
1	Alkaloids	-	-	-	-	-	-
2	Carbohydrates	-	-	-	-	-	-
3	Glycosides	-	-	-	+	+	+
4	Phytosterols	+	-	-	+	+	+
5	Saponins	-	-	-	+	+	+
6	Protein and amino acid	-	-	-	+	+	+
7	Phenolic compounds and tannins	-	-	-	+	+	+
8	Gums and mucilage	-	-	-	+	+	+
9	Flavanoids	-	-	-	+	+	+
10	Fixed oil and fats	-	-	-	-	-	-
11	Volatile oils	-	-	-	-	-	-

Table 5 – Fluorescence Characteristics of the powdered samples of Adansonia digitata on different reagents.

Drug	Chemical reagents	Colour developed
Adansonia Digitata Powder	IN NaOH	Green fluorescence
	50% Sulphuric Acid	Dark Green
	50% Nitric Acid	Green
	INHCL	Dark Green

Table 6- Fluorescence Characteristics of Adansonia digitata extract

S.No	Extracts	Colour Developed
1	Petroleum ether (60°to80°)	Green
2	Benzene	Dark Brown
3	Chloroform	Dark Brown
4	Methanol	Brownish Green
5	Aqueous	Green