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PHARMACOGNOSTIC STUDIES OF LEAVES OF *MANGIFERA INDICA* LINN.

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ABSTRACT

The tree of *Mangifera indica* Linn. In India known as a Mango tree having the importance of medicinal properties for public health care. *Mangifera indica* Linn. leaves are playing an important role in the Indian System of Medicine. Especially the Leaves of *Mangifera indica* L. are reported to have good medicinal values in Ayurveda, Siddha & Unani system of medicine. The present study on the Pharmacognostical as well as phytochemical studies including parameters such as Morphology, Microscopical, Physical and Chemical studies of the *Mangifera indica* L. leaves. These observations will help in the identification and determine the quality and purity of the drug in the crude form and also to distinguish the drug from its adulteration.

Keywords: *Mangifera indica* L. Leaves, Evaluation Parameters

INTRODUCTION

The *Mangifera indica* (Family- Anacardiaceae) tree is native from tropical Asia. It is a large evergreen tree, long living, 10-45 m high with a strong trunk and heavy crown. Mango is extensively cultivated in

south India, north India, and West Bengal & Jammu Kashmir for its foliage yield [1]. After decades of serious obsession with the modern medicinal system, people going to use of herbal drug to the ancient healing systems

such as Ayurveda, Siddha and Unnani. This is because of the adverse effects associated with synthetic drugs. The Herbal drugs play an important role in regarding the health care programs especially in developing countries. [2].

Now a days lack of information or documentation and stringent quality control regarding the herbal drug, which has problem the acceptance of the alternative medicines in the developed countries. So, there is a need for documentation of research work carried out on traditional medicines, [1]. With this backdrop, it becomes extremely important to make an effort towards standardization of the plant material to be used as medicine. The process of standardization can be achieved by doing the e pharmacognostic and phytochemical studies, [3, 4]. These studies help in identification and authentication of the plant material. Correct Identification and quality assurance of the starting materials is an essential prerequisite to ensure reproducible quality of herbal medicine which will contribute to its safety and efficacy. Simple pharmacognostic techniques used in evaluation of plant material include its morphological, microscopical and biochemical characteristics [1].

There are no systematic studies have been reported for its pharmacognostical and

phytochemical study hence an effort has been made to establish the Pharmacognostical as well as phytochemical study of *Mangifera indica* L. leaves.

MATERIALS AND METHODS

Collection and Authentication

The leaves of *Mangifera indica* Linn. were collected from Ramling Mudgad, Dist.-Latur (Maharashtra) and its botanical identification was confirmed from Indian Council of Medical Research, Belgaum, (Karnataka), India. After authentication leaves were subjected to observation of macroscopic parameters.

Macroscopic and Microscopic Analysis

Macroscopic analysis of the plant was studied according to the method of [5].

Macroscopic of Leaf

In the present study the leaves of *Mangifera indica* Linn. were investigated for its macroscopic characteristics. The macroscopic characters such as Size, shape, margin, apex, Surface, colour, odour, taste, nature, texture were studied for Morphological investigation. Macroscopic characters, which were observed, are given in **Table 1**.

Microscopic Characteristics

Powder Characteristics

In present study the dried leaves of *Mangifera indica* Linn. were pulverized into fine powder separately. The powder was

investigation for their microscopic characteristic.

The pulverized powder of leaves was boiled separately with chloral hydrate solution in small quantity. Remove cleaved powder in three separately with watch glass respectively and stain with one drop each of phloroglucinol and concentrated hydrochloric acid. Mount a little of the treated powder in dilute glycerine and observed the slide under microscope at low power.

Physical Evaluation

The ash values, extractive values and loss on drying were performed according to the officinal methods prescribed in [6-9] on quality control methods for medicinal plants materials.

Phytochemical Analysis

The preliminary phytochemical tests for dried leaves extracts were also carried out according to the standard procedures described by [6, 10]. The various tests and reagents used are given below and observations are recorded in **Table 4**.

Fluorescence Analysis

Many drugs fluorescence when their powder is exposed to ultraviolet radiation. It is important to observe all materials on reaction with different chemical reagents under UV light [11]. The fluorescence characteristics of powdered drug were studied under U.V. light

after treating with different chemical reagents is reported in **Table 3**.

RESULTS AND DISCUSSION

Macroscopic and Microscopy

Macroscopically, the fresh leaf of *Mangifera indica* Linn. The size, Shape, Margine, Apex, Surface, Colour, Taste, Sharp and Odour shown in **Table 1**.

The powder microscopy of leaf of *Mangifera indica* L. Consist of Sclerenchyma & parenchyma, Stomata on lower & upper epidermis, Fibers and Starch grains. The powder microscopy characters. The powder microscopy characters which are shown in **Table 2**.

Physical Evaluation

The, Ash Values likes (Total Ash, Acid insoluble ash, Water soluble ash), Alcohol soluble extractive, Water soluble extractive, Loss on Drying (LOD) and Fluorescence of leaf powder are given in **Table 3**.

Phytochemical Screening

The leaf extracts of *Mangifera indica* Linn. was subjected to phytochemical screening for the presences of type of phytoconstituets. The extracts were found to contain carbohydrates, alkaloids, glycosides, flavonoids, tannins and saponins (**Table 4**).

CONCLUSION

Therefore, Evaluation methods may be useful for the correct identity and quality of a crude

drug. Before any drug can be included in the pharmacopoeia, these standards must be established. The majority of the information on the identity, purity and quality of the plant material can be obtained from its macroscopy, microscopy and physical & chemical parameters. As there is no record on pharmacognostical work on leaves of *Mangifera indica* Linn. The present work is undertaken to produce some Pharmacognostical standards.

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REFERENCES

- [1] Sala AV, Indian Medicinal Plant, Orient Longman Limited, Chennai, 1997, 380-385.
- [2] Ross IA, Medicinal Plants of the World, Human Press. Inc. Totawa, New Jeneey, 1999, 197-203.
- [3] Wealth of India, A dictionary of Indian raw materials and industrial products, C.S.I.R., New Delhi, II C, 1950, 3.
- [4] Wealth of India, Raw Materials; CSIR, New Delhi, 6, 1962, 429-430.
- [5] Evans WC, Evans D and Trease GE, Trease and Evan's pharmacog., 16th Ed., Saunders/Elsevier, 2009.
- [6] Kokate CK, Practical Pharmacog., Vallabh Prakashan, 4, 1994, 29.
- [7] Khandelwal KR, Practical Pharmacog., New Delhi: Vallabh Prakashan, 1994, 149-60.
- [8] Indian Pharmacopoeia, Government of India, Ministry of Health and Family Welfare, Controller of Publication, 4th Ed., New Delhi; 4 (2), 1996, A53-A54.
- [9] WHO/PHARM/92.559/rev.1, Quality Control Methods for Medicinal Plant Materials Geneva: Organization Mandiale De La Sante, Geneva, 9, 1992, 22-34.
- [10] Harborne JB, Methods of extraction and isolation. In: Phytochemical methods, 3rd Ed., Chapman and Hall, London, 1998, 60-66.
- [11] Mukherjee PK, Quality control of herbal drug, 1st Ed., New Delhi: Business Horizons Pharmaceut. Publ., 2010, 184-191.



Figure 1: Leaves of *Mangifera indica* Linn. (F- Anacardiaceae)

Table 1: Macroscopic Character of Leaves of *Mangifera indica* Linn.

Plant Name/ Morphology	<i>Mangifera indica</i> L.
Colour	Green
Odour	Characteristic
Taste	Acrid
Size & Shape	25 cm long and 8-cm wide
Surface	lanceolate-elliptical, pointed at both ends

Table 2: Microscopic Character of Leaves *Mangifera indica* Linn.

Plant Name	<i>Mangifera indica</i> L.
Microscopical Observations	Paracytic stomata
	Lignified (pink colour) Xylem & phloem Stomata
	Prism shape calcium oxalate crystal with shining
	Covering trichomes

Table 3: Standardization of Leaves of *Mangifera indica* Linn.

S. No.	Physico-Chemical Parameter	<i>Mangifera indica</i> L.
1.	Foreign matter	Nil
2.	Ash Values:	
	• Total ash	1.2 %
	• Acid insoluble ash	8.0 %
	• Water-soluble ash	2.80 %
3.	Extractive values:	
	• Alcohol soluble extractive	12.10 % w/w
	• Water soluble extractive	8.62 % w/w
4.	Loss on drying (at 110 ⁰ C)	6.72 % w/w
5.	Fluorescence At 254 nm & 366 nm.	Fluorescence

Table 4: Phytochemical Investigation Extracts of *Mangifera indica* L. (MI)

S. No	Name of the Test	MI		S. No	Name of the Test	MI	
		ALE	AQE			ALE	AQE
1.	Test for alkaloids			5.	Test for carbohydrates		
	a. Dragendroff's test	+	+		a. Fehling's test	+	-
	b. Mayer's test	+	+		b. Benedict's test	+	-
	c. Hager's test	+	+		c. Molisch's test	-	-
	d. Wagner's test	+	+		d. Barfoeds test	-	-
2.	Test for glycosides			6.	Test for flavonoids		
	a. Keller – Killaini Test	+	+		a. Shinoda test	-	-
	b. Baljet's Test	+	+		b. Alkaline reagent test	-	+
	d. Libermann's test	+	+		c. Lead acetate test	+	+
3.	Test for tannins			7.	Tests for proteins		
	a. Gelatin test	+	+		a. Xanthoprotein test	-	+
	b. Ferric chloride test	+	+		b. Millon's test	+	-
	c. Lead acetate test	+	+		c. Biuret test	+	+
	d. Dil HNO ₃ test	+	-		d. Ninhydrin test	-	-
4.	Test for fats			8.	Test for Volatile oils		
	Solubility test	+	+		Filter paper test	-	-
	Filter paper test	-	-		solubility test	-	-