

**PHARMACOGNOSTICAL IDENTIFICATION AND
STANDARDIZATION STUDIES OF LEAVES OF
RICINUS COMMUNIS LINN.**

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ABSTRACT

Ricinus communis L. is a large evergreen tree. Cultivated chiefly in Andhra Pradesh, Maharashtra, Karnataka and Orissa. World Health Organization appreciated the importance of medicinal plants for public health care in developing Nations. *Ricinus communis* L. leaves having important role in the traditional Ayurvedic and Unani systems of holistic health and herbal medicine of the east. Especially the Leaves of *Caesalpinia bonduc* L. are reported to have good medicinal values in traditional system of medicine. The present study highlights the Pharmacognostical as well as phytochemical studies including parameters such as Macroscopic, Microscopic characters, Physical evaluation and preliminary phytochemical studies of the *Ricinus communis* L. leaves. These observations will help in the Pharmacognostical identification and standardization of the drug in the crude form and also to distinguish the drug from its adulteration.

Keywords: *Ricinus communis* L. leaves, Evaluation & Standardization .

INTRODUCTION

Ricinus communis Linn. Belonging to family of Euphorbiaceae and in India that plant know as Ernda tree. *Ricinus communis* L. is a large evergreen tree. Cultivated chiefly in Andhra Pradesh, Maharashtra, Karnataka and Orissa. Since ancient time the erana leaves, roots and seeds used in treat to various disease such as agstringent, thermogenic, carminative, purgative,

anthelmintic, emollient, diuretic ,aphrodisiac and the oil obtained from the seeds is slightly bitter, acrid, sweet, antipyretic, thermogenic and viscous. It is used as a very effective purgative for all ailments caused by vata and kapha. Herbal drugs play an important role in health care programs especially in developing countries. Ancient Indian literature incorporates a remarkably broad definition of medicinal plants and considers 'all' plant parts to be potential sources of medicinal substances.¹

However a key obstacle, which has hindered the acceptance of the alternative medicines in the developed countries, is the lack of documentation and stringent quality control. There is a need for documentation of research work carried out on traditional medicines.² 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 stepwise pharmacognostic and phytochemical studies.³

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 standardization of plant material include its morphological, anatomical and biochemical characteristics.⁴

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 *Ricinus communis* L. leaves.

MATERIALS AND METHODS

Collection and Authentication

The leaves of *Ricinus communis* L. 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 macroscopical parameters.

MACROSCOPIC AND MICROSCOPIC ANALYSIS

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

Macroscopic Characteristics

In the present study the leaves of *Ricinus communis* L. 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.



Fig-1: Leaves of *Ricinus communis* L.

Microscopic Characteristics

Powder Characteristics

In present study the dried leaves of *Ricinus communis* L. 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 Indian pharmacopeia and the WHO guidelines on quality control methods for medicinal plants materials.^{6,7,8,9}

PHYTOCHEMICAL ANALYSIS

The preliminary phytochemical tests for dried leaves extracts were also carried out according to the standard procedures described by Kokate.^{10,11}

The various tests and reagents used are given below and observations are recorded in Table No.4.

Fluorescence Analysis¹²

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. The fluorescence characteristics of powdered drug were studied under U.V. light after treating with different chemical reagents is reported. (Table-3)

RESULTS AND DISCUSSION

Macroscopic chracters

Macroscopically, the fresh leaf of *Ricinus communis* L.. The size, Shape, Margine, Apex, Surface, Colour, Taste, Sharp and Odour shown in Table-1.

Table 1: Macroscopic character of Leaves of *Ricinus communis* L.

Plant Name / Morphology	<i>Ricinus communis</i> L.
Colour	Green
Odour	Mild
Taste	Astringent / Salty
Size & Shape	Alternative, longpetiolare, stipulate, palmately lobed, lobes 7 or more.
Surface	lanceolate-elliptical & having more margin.

Microscopica characters

The powder microscopy of leaf of *Ricinus communis* L. Consist of Paracytic stomata on lower & upper epidermis, Xylem fibers, Starch grains and Fibers. The powder microscopy characters which are shown in Table-2.

Table 2: Microscopic character of Leaves *Ricinus communis* L.

Plant Name	<i>Ricinus communis</i> L.
Microscopical Observations	Paracytic stomata with attached trichomes
	Scalariform Xylem and lignifier Phloem
	Covering trichomes
	Non-lignified Fibers

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.

Table-3: Standardization of *Ricinus communis* L. Leaves.

Sl.No.	Physico-chemical parameter	<i>Ricinus communis</i> L.
1.	Foreign matter	Nil
2.	Ash Values:	
	Total ash	1.10 % w/w
	Acid insoluble ash	2.1 % w/w
	Water-soluble ash	1.5 % w/w
3.	Extractive values:	
	Alcohol soluble extractive	28.00 % w/w
	Water soluble extractive	54.11 % w/w
4.	Loss on drying (at 110 ⁰ C)	7.90 % w/w
5.	Fluorescence At 254 nm & 366 nm.	No fluorescence

Phytochemical screening

The leaf extracts of *Ricinus communis* L.(RC) was subjected to phytochemical screening for the presences of type of phytoconstituets. The extracts were found to contain carbohydrates, alkaloids, glycosides, flavonoids and tannins . Which shown in Table No.4.

Table 4: Phytochemical Investigation of Alcoholic extract (ALE) and Aqueous extracts (AQE) of *Ricinus communis* L.(RC).

Sr.No	Name of the Test	RC		Sr.No	Name of the Test	RC	
		ALE	AQE			ALE	AQE
1.	Test for alkaloids			5.	Test for carbohydrates		
	Dragendroff's test	+	+		Fehling's test	+	-
	Mayer's test	+	+		Benedict's test	+	+
	Hager's test	+	+		Molisch's test	-	+

	Wagner's test	+	+		Barfoeds test	-	-
2.	Test for glycosides			6.	Test for flavonoids		
	Keller – Killaini Test	-	-		Shinoda test	+	+
	Baljet's Test	-	-		Alkaline reagent test	-	-
	Liebermann's test	-	+		Lead acetate test	+	+
3.	Test for tannins			7.	Tests for proteins		
	Gelatin test	+	+		Xanthoprotein test	-	+
	Ferric chloride test	+	+		Millon's test	-	-
	Lead acetate test	-	+		Biuret test	-	-
	Dil HNO ₃ test	-	-		Ninhydrin test	-	-
4.	Test for fats				Test for Volatile oils		
	Solubility test	+	+		Filter paper test	-	+
	Filter paper test	+	+		solubility test	-	+

CONCLUSION

Therefore, Evaluation methods may be useful for the correct identity and quality of a crude drug. Before 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 *Ricinus communis* L. The present work is undertaken to produce some pharmacognostical standards.

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