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Traditional Use of *Ricinus communis* Leaves in Jaundice and Their Therapeutic Activity in Various Diseases



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ABSTRACT

Medicinal plants have an important role in healthy human life. the large community of humans depends on nature and their traditional and medicinal values. Ricinus communis is one of the effective plant which offer a solution to various kind of diseases. The present research aims to review the medicinal properties of the herbal plant Ricinus communis and their possible role as herbal medicines. Purpose of present study, using the term R. communis and their different parts containing phytochemical constituent useful in treatment of several type of diseases like cancer, diabetes and convulsant etc. The leaves of the plants shown the presence of major phenolic compounds which treat Jaundice and shows hepatoprotective activity. In the different areas rural and tribal peoples used the extract of R. Communis leaves in treatment of jaundice in various forms as juice or paste. Also, their each part contains the phytoconstituents which shows various therapeutic activities like anticancer, antiasthmatic, anti-inflammatory, antimicrobial, antifertility, and many more. Therefore, all parts of the medicinal plant Ricinus communis and their leaves properties to cure jaundice from ancient times are considered highly beneficial in medicinal field.

INTRODUCTION:

Ayurveda life science of human being herbs that obtained from natural source. the basic necessities of human being food, cloths & one an important is good health which is provided by plant source plant kingdoms are source of organic compounds reach, which have been used for various medicinal purposes. In Ayurveda traditional system of medicine there are no of natural crude drugs that have potential to treat diseases and abnormality *Ricinus communis* is one of them having multiple medicinal properties for multiple medicinal purpose . Family: Euphorbiaceae popularly known as 'castor plant' and commonly known as 'palm of Christ', Jada (Oriya), Verenda (Bengali), Endi (Hindi), Errandi (Marathi), Diveli (Guajarati)1. The plant is widespread throughout tropical regions as Ornamental plants.

In nature being a depository to extensive scientific knowledge has always uplift human efforts to give one self up to exploration activities This research act by humans has not only propitiate the curiosity and attentiveness but has also to lead the discovery of many economical and reasonable solution for various condition. The area is rich in medicinal plant which are widely used by the different rural and trible area peoples In since ancient times many different medicinal plants used in treatment of jaundice. The relationship between. Plants and human being is an age-olde, which is represent us ethnobotany The study of concepts, knowledge, belifs and practices between the ethic groups of tribal and rural peoples for curing , excluding and treating jaundice involved in ethnomedicines . The tradition medicinal system represent the indigenous belifs, skills and execution of the rural and tribal peoples on their experience to promote their health. Tribal people having their own medicine systems which are ancient and some of which are not documental in the literature. for treating the jaundice this tradition has been passed from one generation to the other.

The various parts of plant medicinal plant like shrubs, herbs, and trees used for treating jaundice and other diseases like neurodegenerative, inflammatory. According to WHO a medicinal plant is the plant which have one or more of its parts contain substance. which is use for various therapeutic purpose give as a precursor for the chemo-pharmaceutical semi-synthesis. Various bioactive compounds of plant like secondary metabolites, glycosides tannins, steroids, etc. are the reasons for their medicinal value. Ethnomedical plants used for treating various disorders like diabetes, dysentery, typhoid and jaundice different parts of plant including roots, leaves, fruits, and flowers are used for curing jaundice furthermore,

Jaundice is not just diseases but also a sign of diseases that occurs in the liver, which indicate disablement in the functioning of the liver.

Basically the term jaundice is taken form French word "jaune" which means 'yellowish ness' and is represent by yellowish pigmentation that shown generally by skin and eyes it fall out to the exceeding level of bilirubin. According to pathophysiology of jaundice it is mainly caused due to increased levels of bilirubin and it over production in liver which may occur due to many reasons like acute liver inflammation, obstruction of the bile duct, gilherts syndrome, cholestasis and hemolytic anemia. Due to historical or ancient traditional reasons the expensive and side effect of allopathic medicines, traditional and herbal medicines have achieved acceptance for curing jaundice. So, numerous ethnomedicinal plants have been used by the tribes and communities based on their indigenous knowledge. Thus, this review is under take for the research of ethnomedicinal plants used on the treatment of jaundice, which can be cured by locally available plants. These phytoconstituents include steroids, proteins, carbohydrates, terpenoids, alkaloids, saponin, phenols, flavonoids, vitamins, tannins and essential oil shows inhibitory action against hepatoprotective diseases mainly against jaundice.

MORPHOLOGY

The castor oil plant is a fast-growing, suckering perennial shrub or occasionally a soft wooded small tree up to 6 meters or more, but it is not hardy in nature. This plant was cultivated for leaf and flower colors and for oil production. Leaves are green or reddish in color and about 30-60 cm in diameter. The leaves contain 5-12 deep lobes with coarsely toothed segments which are alternate and palmate. The stems are varying in pigmentation. The flowers are monoecious and about 30-60 cm. long2.The fruit is a three-celled thorny capsule. The capsule of fruit covered with soft spins like processes and dehiscing in to three 2-valved cocci. The seeds are considerable differences in size and color. They are oval, somewhat compressed, 8-18 mm long and 4-12 mm broad. The testa is very smooth, thin and brittle. Castor seeds have a warty appendage called the caruncle, which present usually at one end from which runs the raphe to terminate in a slightly raised chalaza at the opposite end of the seed.

HABITAT

• This plant is common and quite wild in the jungles in India and it is cultivated throughout India, chiefly in the Madras, Bengal and Bombay presidencies.

Two varieties of this plant are known

- A perennial bushy plant with large fruits and large red seeds which yields about 40 P.C of oil.
- A much smaller annual shrub with small grey (white) seeds having brown spots and Yielding 37% of oil.



Plant of Ricinus communis

Classification of *Ricinus communis*

Kingdom: Plantae

Phylum: Spermatophyta

Subphylum: Angiospermae

Class: Dicotyledonae

Order: Euphorbiales

Leaf of *Ricinus communis*

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Family: Euphorbiacae

Genus: Ricinus

Species: communis D

PHYTOCHEMICAL CONSTITUENTS

The Preliminary Phytochemical study of R. communis revealed the presence of steroids, saponins, alkaloids, flavonoids, and glycosides.

1) The dried leaves: The presence of two alkaloids,

- 1: ricinine (0.55%)
- 2: N-demethylricinine (0.016%)

And six flavones glycosides :-

1: kaempferol-3-0-B-D-xylopyranoside

2: kaempferol-3-0-B-D-glucopyranoside

3: quercetin-3-0-B-D-xylopyranoside

4: quercetin-3-0-B-D-glucopyranoside

5: kaempferol-3-O-ß-rutinoside

6: quercetin-3-0- β - rutinoside.

The monoterpenoids :- (1, cineole, camphor and a-pinene)

Sesquiterpenoids :-(B-caryophyllene)

Phenolic compound:-Gallic acid ,quercetin ,Gentisic acid, rutin, epicatechin ,and Ellagic acid

2) The seed :- 45% of fixed oil which consists glycosides Ricinoleic, isoricinoleic, stearic and dihydroxystearic acids, lipases and crystalline alkaloid, ricinine

Ether extract of seed:-Ergost-5-en-3-ol,stigmasterol,Y-sitosterol,fucosterol and probucol

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3) The Stem:- ricinine

The GLC study of castor oil:-presence of ester

Palmitic(1.2%),arachidic(0.3%),hexadecenoic(0.2%),linolenic(0.2%),oleic(3.2%),stearic(0.7%),ricinoleic(89.4%)

MATERIAL AND METHOD: -

1.In recent works it is release that extract of leaves of *Ricinus communis* showing hepatoprotective activity against hepatic injury induced by the single dose of CCL4.1.0ml of extract prevent completely lipid peroxidation and protein oxidation partially in liver these dose protected glucose-6-CCL4 promote oxidative damage operative through glutathione in kidney and liver since these extract increase glutathione contain an independently given also.

2.Serum AST and alkaline phosphatase detect hepatic damage it commonly used to specification to test functions of the liver. The alkaline phosphate is widely used to as symbol of cholestasis. Conjugated and Unconjugated bilirubin are increase in hepatic obstruction of cholestasis.

3.Serum bile pigments determine the deformity in intra hepatic obstruction, hepatic clearance by microsomal conjugation of bile canaliculi, extra hepatic obstruction of bile duct and cholestasis.

4. These diagnostic tests are carried out to evaluate the protective efficacy of *Ricinus communis* leaves extract against induced liver injury in present experimental studies.

Ethnobotanical uses:-

1.Castrol oil is widely used as a catharactic, and also for lubrication and illumination. Or after modification finds extensive application in industry, particularly in USA.

2. The treated oil uses in products like paints, enamels and varnishes, oiled fabrics, linoleum, patent leather, fly paper, typewriting and printing inks, greases and special lubricants, polishes, waxes, cutting, dielectric and condenser oil, cosmetics, pharmaceutical and insecticidal formulation.

3.castrol oil is often given orally, alone or with quinine sulphate to induce labour in pregnancy at term.

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4. The oil can be used as a vehicle for parenteral administration of steroidal harmones. it used in the preparation of liquid disinfectant phenyls.

5.Castrol oil is mild and most efficient purgative, and is well adapted for infants and young children, the puerperal state, and in irritable conditions of the alimentary canal or of the genito-urinary organs.

6.it is one of the safest and most reliable purgatives we possess for the relief of obstinate constipation.

7.the leaves have been also recommended in the form of a decoction or poultice, as an application to the breasts of women to increase the secretion of milk.

8.the decoction has also been reputed to act as a lactagogue and emmenagogue when administered internally.

9.castrol cake is used as manure in india.it is rich in nitrogen and other minerals, and has been found to be suitable as a manure for paddy, sugarcane, tobacco etc.

10. leaves occasionally feed to Cattel. they are reported to increase the yield of milk.

11.the powdered leaves are used for repelling aphids, mosquitoes, white flies and rust mites. the insecticidal activity is probably due to the presence of the alkaloid ricinine in them.

12.R. Communis Polyurethane has been marketed under the trade name Spra-Kast in USA; however, most of the claims regarding the use of the plant in combating pests have proved to be unfounded.

13.Expressed juice and aqueous and alkaline extracts of the leaves were active against mycobacteria and yeast. leaves are said to use in the form of a poultice or fomentation on sores, boils and swellings.

15.leaves coated with oil and warmed, are commonly applied over the abdomen to give relief in the flatulence in the children.

16.an infusion of leaves is used for stomach ache, and as a lotion for the eye. leaves are said to give relief in caries and are applied over guinea-worm sores to extract the worm.

17.Fresh juice of leaves is reported to be used as an ematic in the poisoning by narcotics like opium; it is also considered useful in jaundice.

18.roots are administered in the form of a decoction for lumbago and allied complaints, in the form of a paste for toothache.

19.Laboratory and pilot plant trials at the Forest Research Institute, Dehra Dun have shown that Un barked stems of both the annul and the perennial varieties of castrol plant can be employed for the production of easy-bleaching chemicals pulps suitable for making writing, printing papers, and newsprint.

20.Castor stems on digestion with lime yield pulps suitable for the production of strawboards.

21.Dried stems and branches of the plant are used in thatching and as wattle in the walls of mud huts. dried stem and seed hulls constitute a highly combustible fuel.

R. communis plant parts extract	Therapeutic activity	Compounds present in extract
Fruit extract	 Anticancer Activity:- Potent contender for breast cancer treatment. High efficacy on oestrogens positive MCF-7 and extremely aggressive, triple negative breast cancer cell. Antimetastatic property inhibit adhesion, invasion, migration and expression of a metalloproteinase from matrix of both cell lines. Induces apotosis in such cells. Wurtizite type of zinc oxide is core reason behind extensive use of <i>Ricinus communis</i> against cancer confirmed by HRTEM. Free radical scavenging promote feature of anticancer. 	1.Ricinine 2.Epigallocatechin 3.P-Coumaric acid 4.Ricinoleic acid 5.Zinc oxide
Leaves ethanolic	Hepatoprotective activity: -	
extract	Hepatoprotective activity shows due to its inhibitory	

Tabel 1:- containing the *Ricinus communis* plant parts extract, their therapeutic activity and phytochemical compounds present in it:

Seeds extract	activity of an increase in activities of serum transaminase and level of liver lipid per oxidation, protein, glycogen and activities of acid and alkaline phosphate in liver induced by CCL4. <i>Ricinus communis</i> protective against necrosis of liver along with fatty changes. Antifertility activity: - It helps inhibition of maturation follicle in ovary and prevent ovulation. By the pitutory gland release gonadotrophins due to	1.Flavonoids 2. Tannins
Seeds extract	sex harmones by both positive and negative feedback mechanism and also pitutory gland block release of luteinizing harmone and follicle stimulating harmone because of effect of combine ostrogen and progesterone in luteal phase of menstrual cycle.	 Phytosterols Steroides Alkaloids
	Anticonvulsant activity: - R.Communis leaves shows anticonvulsant and analgesic activity. Various secluded compound has shows positive result for anticonvulsant activity and proved to be upright epileptic after the test were conducted Dosage of 60mg/kg of a compound from R.commuins seed was given to the animal, which showed inhibition of seizures to about 80% as compared to the normal drug, which showed 8.89% seizures inhibition.	
	Antimicrobial activity: -	
	It is good against dermatophytic and pathogenic bacterial strains such as streptococcus progenies, streptococcus aureus as well as klebsiella pneumonia, Escheria coli.	
Roots extract	Anti-Inflammatory activity: -	1 Disinglain
	Anti-inflammatory and free radical scavenging activity were observed from root extract of <i>Ricinus</i> <i>communis</i> . Compared to any other medicine, <i>Ricinus communis</i> is reported to show a faster therapeutic effect on inflammation.it also reduce burning, rashes, itching, and swelling; itching associated with inflammation.	2.Flavonoids

	Anti asthmatic activity: -	
	Ricinus communis displayed the mast cell regulating effect due to saponin content which is present in the roots. Flavonoids play a major role in bronchodilation and smooth muscle relaxant activity. Ricinus communis exhibit anti-asthmatic properties but it also used to treat other respiratory issues such as frequent chest pain (Anginal Pectoris), increase in heart rate and sweating due to irregular heartbeat.	1 Elavonoide
	Anti-Diabetic: -	2. Saponins
	The 50% ethanolic extract of roots of <i>Ricinus communis</i> 500 mg per kg body weight has shown a significant lowering of blood glucose level both type 1 diabetic and normal animals.	
	The ethanolic extract at 600mg/kg/BW significantly leads to a reduction in blood glucose levels.	
	Oral administration of the extract at 600 mg/kg/BW inhibited any alteration in total proteins, total bilirubin, albumin, urea, and creatinine levels, thus proved to be a good alternative for managing Diabetes mellitus.	1.R. Communis Polyurethane
	Bone regeneration Oil of <i>Ricinus communis</i> was known to be used in treating different bone -related diseases in ancient times as herbal and mythic medicine.	
	Bone deformities, acute osteomyelitis, articular pains and afflicted limbs are some bone related diseases that were treated by R. Communis	
Castor oil	Polyurethane resin formation promotes fibroblastic neoformation which effectively replace the bone from inside and around the porosities of the biomaterial in which delayed inflammatory reactions is absent.	
	Calcium phosphate, when mixed with R.communis polyurethane could be helpful in matrix mineralization and can be immense interest while preparing biocompatible material in comparison to demineralized bone	

Ophthalmic properties	
R. communis contains oil that can be used as a	
lubricant to treat dry eyes.	
The lubrication property not only maintains the	
hydration level in the eyes but also reduces muscle	
strain in them. proper eye muscle contraction and	
expansion lead to better vision in an individual.	
An eye drops containing the oil of R. communis is	
generally used to cure dry eyes, inflammation,	
redness, swellings, and watery eyes.	

CONCLUSION: -

The traditional knowledge of ethnomedicinal plants by the rural people and has shown to be used in the treatment of various diseases and the production of medicine due to their medicinal properties.

The Folk-based plant medicines have shown great capability to form the basis of jaundice treating drugs the motive of the present study was to introduced the ethnomedicinal knowledge of R. communis used for the treatment of jaundice by tribal and rural communities.

The other aim of these research was to present the different important phytochemical and active compounds present in these plants and support of their medicinal uses with specific reference to the treatment of jaundice and also in various disease.

The plant demonstrated the presence of several phytochemicals in them and displayed phenolic and flavonoids compounds with hepatoprotective properties.

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