



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2023; SP4: 06-08

Anita Chauhan
Assistant Professor,
Department of Botany, DPG
Degree College, Gurugram,
Haryana, India

Priyanka Chaudhary
Assistant Professor,
Department of Botany, DPG
Degree College, Gurugram,
Haryana, India

Correspondence Author;
Anita Chauhan
Assistant Professor,
Department of Botany, DPG
Degree College, Gurugram,
Haryana, India

(Special Issue)

**“National Conference on
Multidisciplinary research for sustainable development”**

A wonder tree: *Ricinus communis*

Anita Chauhan and Priyanka Chaudhary

Abstract

Nature has been an excellent source of therapeutic agents since the immemorial time. India is known as the world leader in castor seed and oil production and leads the international castor oil trade. Plant-based compounds are of great interest for discovering a drug for the particular disease. Due to varied pharmacological activities of plants as tested by using the plant crude extracts, the screening and selection of lead candidates for drug development from medicinal plants have come into effect. Castor bean, *Ricinus communis* L. is a species of flowering plant in the family, Euphorbiaceae, which contains a vast number of plants mostly native to the tropics. Castor plant has high traditional and medicinal value. The activity of the plant possess the important phytochemical constituents like flavonoids, saponins, glycosides, alkaloids and steroids etc. The aim of this paper is to explain the details of phyto-pharmacological properties of *Ricinus communis* for the future.

Keywords: Medicinal plant, essential oil, flavonoids, saponins, glycosides, alkaloids

Introduction

Natural Products are the wealthy supply of biologically energetic compounds and today's many medicines are either acquired directly from herbal supply or had been advanced from a lead compound at the start acquired from a herbal supply (L Graham Patrick, (2005) ^[10]. Ethanobotany has been deeply rooted in the Indian tradition and culture. Many medicines and their formulations have been primarily based totally on wealthy Ayurveda of historical India. Many plant life were applied to remedy unusual issues.

Among the ones plant life castor is one the vital plant. *Ricinus communis* (Castor oil plant) belong to the own circle of relatives Euphorbiaceae, is one in all the medicinally vital oil seed crop. Castor plant grows usually with inside the tropical and heat region. It is a tall glabrous shrub or nearly small tree, 2-four m high, located in India (Kumari KG *et al.* 2008) ^[8]. Castor plant extracts were used by numerous communities in distinctive regions of the world for remedy and/or comfort varieties of sicknesses. The extracts were proven to own essential and useful organic houses which include antioxidant, antimicrobial, antihelminthic, insecticidal, diuretic, anti-inflammatory, laxative; withinside the remedies of hypoglycemia, edema, rheumatism, headache, asthma, dermatitis, ringworm, warts, dandruff; outside application on breast of nursing moms proven to growth float of milk and the oil proven to alleviate labour ache and resource delivery (Jena J *et al.* 2012) ^[9].

Taxonomical classification

Kingdom: Plantae
Order: Malpighiales
Family: Euphorbiaceae
Sub Family: Acalyphoideae
Tribe: Acalyphae
Sub Tribe: Riciniinae
Genus: *Ricinus*
Species: *R Communis*

Castor Leaf



The leaves are large, frequently darkish smooth inexperienced and approximately 15 to forty five centimetres lengthy, with lengthy petiole. The leaves are palmate with 5 to 11 lobes and outstanding veins at the beneathneath floor. The leaves are alternate, besides for 2 contrary leaves on the node right away above cotyledons. The leaf color varies from mild inexperienced to darkish pink relying on the extent of anthocyanin pigmentation present.

Geographical Distribution

Probably native to Africa, castor beans been introduced and is cultivated in many tropical and subtropical areas of the world, commonly appearing spontaneously. It is found through India, cultivated and found wild up to 2400 meters. Castor bean is originally resident to north eastern Africa and the Middle East. It has escaped cultivation and become naturalized as weed almost everywhere in the world that has a tropical or subtropical climate.

Medicinal uses of castor oil

- It is one of the best laxatives.
- Inducing labor pain.
- Used to treat gallstones.
- It is used to treat plantar heel.
- In controlling fibroids.
- Use in endometriosis treatment.
- Psoriasis and eczema.
- Moles.
- Genital warts.
- Chapped lips.
- It is also used with modern drugs like.
- Miconazole (Antifungal agent).

Literature review

Saponins

Saponins are evidently happening surface-lively glycosides with a one-of-a-kind foaming characteristic. They are particularly produced through vegetation however additionally through decrease marine animals and a few bacteria, 1, 2 however get their call from the soapwort plant (Saponaria) 3, the basis of which became used traditionally as a soap (Latin sap way soap).

The mixture of hydrophobic or fat-soluble sapogenin and hydrophilic or water-soluble sugar element complements the

foaming capacity of saponins. Saponins encompass a sugar moiety generally containing glucose, galactose, glucuronic acid, xylose, rhamnose or methyl pentose, glycosidically connected to a hydrophobic aglycone (sapogenin) which can be triterpenoid or steroid in nature (Riguera R 1997).

Alkaloids

The term 'alkaloid' became coined through W. Meibner, a German pharmacist, meaning 'alkali like'. Latter it became validated that the alkalinity became because of the presence of a simple nitrogen atom. The first alkaloid to be synthesized became coniine in 1886 through Ladenburg, which had already been remoted in 1827. The alkaloids are described as 'simple nitrogenous plant products, generally optically lively and owning nitrogen hetero-cycles as their structural unit, with a said physiological action'. Pelletier (1982) cautioned following definition for alkaloids: 'an alkaloid is a cyclic natural compound containing nitrogen in a terrible oxidation kingdom that's of restricted distribution amongst dwelling organism'.

Material and Methods

Plant Materials

The leaf, stem, seeds of *Ricinus communis* were collected from various localities of Gurgaon near sec 34. They were shade dried at room temperature for 4-5 days. Fine powder was made from these plant parts. This powder was utilized for further studies.

Preparation of crude extract in solvents

Solvent extract were prepared in different solvents at room temperature by simple extraction method. Collected plant parts were shade dried and ground to fine powder using grinder mixture. Dried powder of each plant parts 10 gm was mixed in 100 ml of different extract solvent (ethanol, methanol, petroleum ether, chloroform etc.) in conical flask. The flasks were plugged with papers. All conical flasks were kept on shaker for 5 hours. Samples were then filtered and centrifuged at 5000 rpm for 15 minutes. The supernatant was collected and the solvent was evaporated at 450C, 1ml in vacuum evaporator.

Qualitative phytochemical investigation

Tannins, saponins, steroids, cardiac glycosides, Alkaloids, were carried out using different solvent extracts (methanol, ethanol, petroleum ether, chloroform, aqueous).

(a) Tannins

- 2-3 ml extract was taken in test tube and 10% FeCl₃ (ferric chloride solution) was added in it.
- Dark blue or dark greenish coloration was observed. This is confirmation test for tannin.

(b) Saponins

About 0.5 ml of extract was taken with 5 ml distilled water and then heated to boil frothing (appearance of creamy miss of small bubbles) shows the presence of saponins.

(c) Indole Alkaloids

- Methanolic extract + conc. H₂SO₄ + potassium dichromate was taken in flask.
- Colour change is confirmation for the presence of indole alkaloids.

Observation and results**(a) For tannins**

Fig 1: Result-presence of dark green appears the confirmation of tannins.

(b) For saponins

Fig 2: Result – presence of creamy bubbles at the top confirmation of saponins in the sample.

(c) For indole alkaloids

Fig 3: Result -changes in colour from green to any confirmation of indole alkaloids.

Conclusion

R. Communis or castor plant is a widely traditionally used and potent medicinal plant amongst all the thousands of medicinal plants. The pharmacological activities reported in the present review confirm that the therapeutic value of *R. communis* is much more. It is an important source of compounds with their chemical structures as well as pharmacological properties. The presence of phytochemical constituents proved that the plant has a leading capacity for the development of new good efficacy drugs in future.

References

1. Ajibesin KK, EKPO BA, Bala DN Essien, EE, Adesanya SA. Ethnobotanical survey of Akwa Ibom State of Nigeria, J Ethno pharmacology; c2008.
2. Barry TN, McNabb WC. The implications of condensed tannins on the nutritive value of temperate forages fed to ruminants; c1999.
3. Boulos L. Medicinal plants of North Africa, Algonoc, Michigan Reference Publication, Inc. USA; c1983.
4. Capasso F, Mascolo N, Izzo AA, Gaginella TS. Dissociation of castor oil induced diarrhea and intestinal mucosal injury in rat: effect of NG; c1994.
5. Caupin HJ. Products from castor oil: Past, Present and future In: Gunstone FD and Padley FB (eds.) Lipids technologies and applications; c1997.
6. Devendra C, Raghavan GV. Agricultural by-products in South-east Asia: Availability, utilization and potential value; c1978.
7. Degen AA, Becker K, Makkar HPS, Borowy N. Acacia saligna as a fodder for desert livestock and the interaction of its tannins with fiber fractions; c1995.
8. Gibbs S, Harvey I, Sterling J, Stark R. Local treatments for cutaneous warts; c2002.
9. Jena J, Gupta AK. *Ricinus communis* Linn: A Psychopharmacological review. International Journal of Pharmacy and Pharmaceutical Sciences; c2012.
10. L Graham Patrick. An Introduction to Medicinal chemistry, 3rd ed Oxford University press; c2005.
11. Kumari KG, Ganesan M, Jayabalan N. Somatic organogenesis and plant regeneration in *ricinus communis*; c2008.
12. Lakshamma P, Prapaga L. Identifying the sources of tolerance for drought in castor, *ricinus communis*; c2006.
13. OT Erdogru. Antibacterial activities of some plant extracts used in folk M; c2002.
14. Weiss EA. Oilseed crops. 2nd ed. Blackwell; c2000.