

A CONCEPTUAL STUDY ON CASTOR OIL (Eranda Oil) WITH SPECIAL REFERENCES TO MODERN & AYURVEDIC CLASSICS

***Dr. Arup Jyoti Das **Dr. Kanika Goswami**

*PG Scholar, Dept. of Samhita Siddhanta, Govt. Ayurvedic College, Guwahati-14, Assam,

**Assistant Professor, Dept. of Samhita Siddhanta, Govt. Ayurvedic College, Guwahati-14, Assam.

Abstract : Castor oil, produced from castor beans, has long been considered to be of important commercial value primarily for the manufacturing of soaps, lubricants, and coatings, among others. Global castor oil production is concentrated primarily in a small geographic region of Gujarat in Western India. This region is favorable due to its labor-intensive cultivation method and subtropical climate conditions. Entrepreneurs and castor processors in the United States and South America also cultivate castor beans but are faced with the challenge of achieving high castor oil production efficiency, as well as obtaining the desired oil quality. In this manuscript, we provide a detailed analysis of novel processing methods involved in castor oil production. We discuss novel processing methods by explaining specific processing parameters involved in castor oil production.

In Ayurveda Eranda oil shows a major importance to controlling the vata disorders or neurological problems like Pakshaghat or Hemiplegia. Eranda oil purgation therapy is good for controlling neurological diseases like Hemiplegia (Pakshaghat).

Keywords: Castor oil (Eranda oil), Pakshaghat, Hemiplegia, Ricinoleic acid .

Introduction : The valuable purgative known as Castor Oil is the fixed oil obtained from the seeds of the Castor Oil plant. Besides being used medicinally, the oil is also employed for lubricating purposes, burning and for leather dressing. The Chinese are said to have some mode of depriving it of its medicinal properties so as to render it suitable for culinary purposes. The Castor Oil plant is a native of India, where it bears several ancient Sanskrit names, the most ancient and most usual being Eranda, which has passed into several other Indian languages.

It is very variable in habit and appearance, the known varieties being very numerous, and having mostly been described as species. In the tropical latitudes most favourable to its growth, it becomes a tree 30 to 40 feet high; in the Azores and the warmer Mediterranean countries - Algeria, Egypt, Greece and the Riviera - it is of more slender growth, attaining an average height of only 10 to 15 feet, and farther north in France, and in this country, where it is cultivated as an ornamental plant on account of its large and beautiful foliage, it is merely a shrubby branched annual herb, rarely more than 4 to 5 feet high, with thick, hollow, herbaceous stems, which are cylindrical, smooth and shiny, with a purplish bloom in the upper part.

Description: The handsome leaves are placed alternately on the stem, on long, curved, purplish foot-stalks, with drooping blades, generally 6 to 8 inches across, sometimes still larger, palmately cut for three-fourths of their depth into seven to eleven lance-shaped, pointed, coarsely toothed segments. When fully expanded, they are of a blue-green colour, paler beneath and smooth; when young, they are red and shining. The flowers are male and female on the same plant, and are produced on a clustered, oblong, terminal spike. The male flowers are placed on the under portion of the spike; they have no corolla, only a green calyx, deeply cut into three to five segments, enclosing numerous, much branched, yellow stamens. The female flowers occupy the upper part of the spike and have likewise no corolla. The three narrow segments of the calyx are, however, of a reddish colour, and the ovary

in their centre is crowned by deeply-divided, carmine-red threads (styles). The fruit is a blunt, greenish, deeply-grooved capsule less than an inch long, covered with soft, yielding prickles in each of which a seed is developed. The seeds of the different cultivated varieties differ much in size and in external markings but average seeds are of an oval, laterally compressed form. The smaller, annual varieties yield small seeds- the tree forms, large seeds. They have a shining, marble-grey and brown, thick, leathery outer coat, within which is a thin, dark-coloured, brittle coat. A large, distinct, leafy embryo lies in the middle of a dense, oily tissue (endosperm). The seeds contain a toxic substance which make them actively poisonous, so much so that three large seeds have been known to kill an adult.

Botanical Name- *Ricinus communis* Linn .

Part Used : Seed, Root, leaf.

Seed contain : Ricinoleic acid.

Kingdom – Plantae

Class – Dicotyledons

Sub class – Rosidae

Order –Unisexuales

Family –Euphorbiaceae

Genus –*Ricinus*

Species – *Communis*

Phytochemical Composition : *R. communis* is rich in a diverse variety of phytochemicals, Alugah and Ibraheem have reported the flavonoids and tannins content in the castor plant.

R. communis contain various bioactive phytochemicals such askaempferol- 3-O and kaempferol-3-O- β -D-glucopyranoside, ingenol triterpenoids (lupeol, β - and α -amyrin), quercetin and gallic acid, athujone, camphor and beta thujone, ricin, epicatechin, gentisic acid, catechin, linoleic acid and ricinoleic acid, kaempferol -3-O- β -D-glucopyranoside and quercetin- 3-O- β -monoterpenoids.

Pharmacological Application : *R. communis* is a multipurpose folkloric medicinal plant with some medicinal properties; these properties are associated with either direct application of crude plant extract as a therapeutic agent in various diseases or by inhibition of harmful pathogens, which are known to cause various infections and diseases. Among the various reported activities of *R. communis*, a large number of them are attributed to its extract in crude form followed by various fractions which could be ethanolic, methanolic or chloroform, ethyl acetate, toluene, benzene, and butanol solvents.

Numerous studies have been carried out and published on the biological activities of *R. communis* plants. These activities are both due to the crude extract and its phytochemical compounds which can be of great interest in future for the development of plant-based complementary medicine. Presently, the properties of *R. communis* mentioned in this review include antimicrobial, antifungal, anti- cancer, antidiabetic, anti-inflammatory, antimalarial, antioxidant, central analgesic, anticonvulsant, antinociceptive, anthelmintic, antifertility, laxative, uterine contracting, anti-implantation, anti- asthmatic, bone regeneration, molluscicidal, antiulcer, antihistamine,

wound-healing, cytotoxic, insecticidal, anti-arthritis, antidandruff and hepatoprotective. Diverse phytochemicals bind to specific molecular targets and hence exhibit several pharmacological activities .

Toxicological Properties : *R. communis* has shown some toxic effects accidentally due to the presence of toxic compounds such as ricin and ricinine. Some of the in vivo mouse model studies have shown the ricin toxicity which may vary from hyperactivity to seizure formation and maybe even lead to death at a dose of more than 340 mg/kg intraperitoneally and 3 g/kg orally. However, independent of its uptake, ricin is found to be almost toxic, and there is an increase in the severity of symptoms with an increase in the dose. Symptoms include abdominal pain, emesis, muscular pains, cramps in the limbs, dyspnea, circulatory collapse, dehydration, dysfunction of kidney and liver. Autopsy results in fatal cases have shown the hemorrhagic necrosis in heart, intestine, and edema etc.

Ayurvedic Concept of Eranda Oil :

With the advancement of medical science and upgrading of drugs, there is also increased side effects which is proved in recent research and studies. Here we look towards our system of medicine i.e. Ayurveda where herbal or herbo mineral preparation are used to treat diseases where side effects are negligible.

Eranda oil is a herbal preparation which is undertaken under medicinal and purificatory therapy.

Eranda oil is established as a good vata controller mentioned by different Ayurvedic Texts. Vata is the regulator of our body movements and neurological function. Vata imbalance may cause various neurological problems (Pakshaghat or Hemiplegia etc.) and diseases in our body. So it is important to balance the vata in our body. Eranda oil has good role to control the vata. So eranda is mainly used in vata disorders or neurological problems like Hemiplegia etc.

Gana vergeekarana :

Charaka – Madhura skanda , Angamarda prasamana , bhedana , swedopaga

Sushruta – Vidari –gandhadi, Adhobhaghara, Vatasanshamana

Bhava prakash Nighantu- Guduchyadi varga

Raja Nighantu- Shalmaladi varga

Priya Nighantu – Shatapushpadi varga

Kaidev Nighantu – Oshadhiya varga

Madanpala Nighantu – Panneya varga

Shodhala Nighantu – Shatapushpadi varga

PROPERTIES :

Rasa –Madhura, Katu, Kashaya

Guna –Guru, Snigdha, Tikshna, Suksma

Virya – Ushna

Vipaka – Madhura

Doshkarma – Kaphavata shamaka

Karma : Vatahara , sulahara, shothara, rechana, vrushya, twachya, vedanasthapan, kaphaghna, mutravishodhana, sukrashodhana, kusthaghna, jwarahara , visaghna , vayahsthapan etc.

Therapeutic Indication : Neurological disorders, rheumatism, worm infestation, severe constipation, abdominal disorders etc.

Rogaghanata : Pakshaghata , vatavyadhi, Shula shoth, gulma, arsha, jwara, vatakaphaodara, yakritpleehavruddhi, krimi, amavat, katishulaa, sirashulaa, bastishulaa, kasa, swasa, kustha, mutrakriccha, vridhhi, sukravikara etc.

Discussion & Conclusion : *R. communis* is one of the medicinal plants which have multiple pharmacological applications against various diseases and disorders. The anti-cancer, antidiabetic and antimicrobial activities of *R. communis* are the shaft of light in treating the death-causing diseases throughout the world. The various biological activities of *R. communis* is due to the presence of a varied degree of bio- active phytochemicals. Through this review, it can be justified that both crude form of plant extract and the isolated compounds are responsible for its pharmacological and therapeutic potential. Further studies and utilisation of these plant compounds in an isolated form can be performed to explore their mechanism of action and by deciphering the actual process by which these plant phytochemicals reach the target and exert their action. Novel drugs can be designed by performing various in vitro and animal studies of these phytoconstituents. *R. communis* was used for the synthesis of nanoparticles for testing its activity against both microbial pathogens and cancer cell lines; these nanoparticles will be of keen interest in target drug delivery.

References & Bibliography:

1. Newman DJ, Cragg GM. Natural products as sources of new drugs from 1981 to 2014. *J Nat Prod* 2016.
2. Moreira DL, Teixeira SS, Monteiro MHD, De-Oliveira ACAX, Paumgarten FJR. Traditional use and safety of herbal medicines. *Rev Bras Farmacogn* 2014.
3. Atanasov AG, Waltenberger B, Pferschy-Wenzig EM, Linder T, Wawrosch C, Uhrin P, et al. Discovery and resupply of pharmacologically active plant-derived natural products: A review. *Biotechnol Adv* 2015.
4. Davies J, Davies D. Origins and evolution of antibiotic resistance. *Microbiol Mol Biol Rev* 2010.
5. Bérdy J. Thoughts and facts about antibiotics: Where we are now and where we are heading. *J Antibiot* 2012.
6. Haque MA, Louis VR, Phalkey R, Sauerborn R. Use of traditional medicines to cope with climate-sensitive diseases in a resource poor setting in Bangladesh. *BMC Public Health* 2014.
7. Koehn FE, Carter GT. The evolving role of natural products in drug discovery. *Nat Rev Drug Discov* 2005.
8. Agnivesh "CharakaSamhita", Revised by Charaka and Dridhabala with the Ayurveda

Dipika

commentary of Chakrapanidatta, Reprint 2004.

9. Vagbhata Acharya "AstangaHrudayam" with SarvangaSundaraCommentry of Arunadatta and Ayurveda Rasayana Commentary of Hemadri-Reprint 2005.
10. Vagbhatacharya "AshtangaSangraha"with Shasilekha Commentary of Indu, 1991,CCRAS Publication, New Delhi.
11. Acharya Sushruta "SushrutaSamhita" with Nibandha Sangraha Commentary of Dalhana and the NyayachandrikaPanjika of Gayadasa on Chikitsa Sthana;6th edition, 1997.
12. Vriddhajivaka "KashyapaSamhita" Sddisthana 7th Chapter, Hindi Translation of Sanskrit Introduction by Ayurvedalankar ,Srisatypala Bhisagacharya.
13. Dravyaguna Vignana – P. V. Sharma.



