

# A Beneficial Action of *Ricinus Communis*

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## ABSTRACT

The *Ricinus communis* is very valuable plant for the human beings. *Ricinus communis* also known as castor plant. It has high medicinal value as well as pharmacological value for disease cure activity as well as much more traditional value. In a Castor plant, oil seed with rich oil content shows its high phytochemical compound of monounsaturated fatty acid and bioactive compounds. The predominant triglyceride component in the oil is triricinolein. Minor biological compounds including carotenoid, tocopherol, tocotrienol, phytosterol, phospholipid, phytochemical, and phenolic compounds are present in castor oil. *R. communis* harbours phytochemicals which have been shown the many receptor activate like peroxisome proliferator activated receptor these are receptor are responsible for the transcription factors regulating the expression of genes., nuclear factor NF-k-B responsible for the a regulator of innate immunity, cytochrome P450 function is heme protein that plays a key role in the metabolism of drugs and other xenobiotics, P38 mitogen-activated protein kinases kinase (p38 MAPK), tumor protein P53, B-cell lymphoma-extra-large (Bcl-xL) and vascular endothelial growth factor receptor-2 (VEGFR-2) These compounds offer oxidation stability, anti-inflammatory, and antioxidant properties to the oil. Traditionally the plant is used as laxative, purgative, fertilizer and fungicide etc. whereas the plant possesses beneficial effects such as anti-oxidant, Antinociceptive, antiasthmatic, antiulcer, Antidiabetic, Antifertility etc medicinal properties. This activity show in plant possesses due to the Valuable phytochemical constituents like flavonoids, saponins, glycosides, alkaloids and steroids etc. The motive of this paper is to explain the details of phyto-pharmacological

properties of *R. communis* for the future research work for the upcoming research scholar.

**Keywords:** *Ricinus communis*, castor plant, antimicrobial and pharmacology.

## INTRODUCTION

Hindi name of *Ricinus communis* is Arandi an annual oil seed crop commonly known as castor. *Ricinus communis* sometimes called castor bean but it is not a true bean in nature condition. Castor plant, belonging the family Euphorbiaceae can grow in different geographical areas. Growth of castor is favorable around 20 °C to 25 °C whereas temperatures lower than 15 °C or higher than 38 °C affects originated. The plant growth and appearance vary greatly including its growth pattern, seed color and size, stem color and foliage, as well as oil content. Castor seed is characterized by its elongated, ovoid, oval, or square shape; size variable, 0.4 to 1.6 cm long.<sup>[1]</sup> Its seed color comprises a base color that varies from brown or red to, brownish yellow, grey, black and white. The pattern as such ranges from fine to coarse vein-like structure or dotted to broad splotches.<sup>[2]</sup> The leaves change from pale green to dark red based on the content of anthocyanin pigmentation. The shape of the fruit is globe round-like resembling a spiny capsule like structure. The capsule which encloses the seeds cracks when fully matured. Plant based activity are very beneficial for the treatment of any disease like anti-ulcer, anti-diabetic, anti-fungal etc.<sup>[3]</sup>

Castor oil extracted from the seed mostly using *n*-hexane is very versatile. Thus, it is utilized in several sectors such as agricultural, pharmaceutical, and industrial sectors. Castor oil available marketed product is; ointments, nylon, varnishes, airplane engine lubricants, hydraulic fluids, dyes, detergents, plastics, synthetic leather, cosmetics, and perfumes. Currently, castor oil production is predominant in India, China, and Brazil etc.<sup>[4]</sup> The percentage of seed oil content ranges from 41 to 62% and the annual oil production is about 1.8 million tons over the worldwide. Castor oil chemically structure is based on the ricinoleic acid structure, carboxylic group, hydroxyl group, and the single point of unsaturation. These features provide additional strength to the oil structure. The fatty acid profiles present in castor oil are ricinoleic, oleic, stearic, palmitic, linoleic, linolenic acid and among others. Among them, ricinoleic acid, a monounsaturated fatty acid is the dominant acid constituting about 75 to 90% of the total oil composition. It is worth saying that, the castor oil is the sole oil with such a high amount of fatty acid and this makes it unique from other vegetable oils. The fatty acid profile of castor has low amount of saturated and polyunsaturated fatty acids and this enhance its stability. Like other vegetable oils, the composition and properties of castor oil vary with respect to the method of extraction, geographical location, and type of cultivar. The fatty acid profile of castor oil shares a higher similarity with that of macadamia nut, palm kernel, olive, and sunflower oil.<sup>[4]</sup>

Over the past decades, an increase in world population has dramatically increased the demand for vegetable oils for domestic and industrial purposes. Recent research has unveiled that nutritional unsaturated acids play an important role in reducing individual risks associated with diseases such as asthma, cardiovascular diseases, cancer, and diabetes. Plant-based vegetable oils have been identified to possess high amount of unsaturated fatty acid and certain

biological antioxidants that are effective against several disease. Castor plant is one of the non-oil seed with high nutritional value owing to its rich amount of monounsaturated fatty acid (90%) and bioactive active compounds such as vitamin E component (tocopherols or tocotrienols), phospholipids, phenolics among others. These compounds also account for castor oils stability and flavor making it suitable for many purposes.<sup>[6,7]</sup> Tocopherols are one of the natural antioxidants present in castor oil with anti-proliferative and anti-inflammatory properties. The primary tocopherol isomers, 43.1-96.62 mg/g for  $\delta$  and 30.89-52.7 mg/g for  $\gamma$  are relatively higher than those reported in olive, hazelnut, and sunflower. Also, its physicochemical properties such as low acid and iodine value, high saponification value, and thiobarbituric acid indicate that castor oil has good oil quality. The acid and iodine value of the oil reflects its quality at 1.34 mg KOH/g oil and 83 gI<sub>2</sub>/100 g, respectively. Several studies have been conducted on the fatty acid composition; however, information about the biologically active compounds present in castor oil is very limited.<sup>[8, 9]</sup>

In this present review, the structure of castor oil, extraction methods, fatty acid profile, and neutral lipids (triglyceride) found in castor oil have been highlighted. The various biologically active compounds and physicochemical properties have also been discussed. This review also compares the physicochemical properties and composition of castor oil with other vegetable oils.

*R. communis* harbours phytochemicals which have been shown to target peroxisome proliferator activated receptor (PPAR), nuclear factor NF- $\kappa$  -B, cytochrome p450, P38 mitogen-activated protein kinases kinase (p38 MAPK), tumor protein P53, B-cell lymphoma-extra-large (Bcl-xL) and vascular endothelial growth factor receptor-2 (VEGFR-2).<sup>[10]</sup>

## MORPHOLOGY

The *R. communis* plant is a fast-growing, suckering perennial shrub or occasionally a soft wooded small tree up to 5.7 meter or more, but it is spongy in nature. This plant was cultivated for leaf and flower colors and for oil production. *R. communis* Leaves are reddish, green in colour and about 30-60 cm in diameter size and color may be defer according to the climate nature. 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. long. The fruit is a three-celled thorny capsule. The capsule of fruit covered with soft spines like processes and dehiscent in to three 2-valved cocci. The seeds are considerable differences in size and colour. They are oval, somewhat compressed, 8-18 mm long and 4-12 mm broad. 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. The test is very smooth, thin and brittle.<sup>[11,12]</sup>

## HABITAT

This plant is most common and quite wild in the jungles in India and it is cultivated throughout India, chiefly in the Tamilnadu, Bengal and Maharashtra. 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.<sup>[13]</sup>

## TAXONOMICAL CLASSIFICATION

[13]

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

## BENEFITS OF THE PLANT

The castor oil obtained from the seed of the plant is still widely used traditionally and herbally as a medicine. The seed of the plant is used as fertilizer after the oil was extracted cooked to destroy the toxin and incorporated into animal feeds. The principal use of castor oil is as a purgative and laxative. It is also used as a lamp fuel, lubricant, also used component of cosmetics, and in the manufacture of soaps, printer's ink, plastics, fibers, hydraulic fluid, brake fluid, varnishes, paints, embalming fluid, textile dyes, leather finishes, adhesives, waxes, and fungicides. In India, the leaves are used as food for Eri silk worms and the stalks are used for fuel purpose. This species has been planted for its dune stabilization properties.<sup>[14]</sup>

## PHYTOCHEMICAL CONSTITUENTS

Based on the Preliminary Phytochemical study of *R. communis* presence of steroids, saponins, alkaloids, flavonoids, and glycosides these chemical constituents are responsible for the various pharmacological actions.<sup>[12]</sup> The dried leaves of *R. communis* showed the presence of alkaloids, ricinine (0.55%) and N-demethylricinine flavones glycosides kaempferol-3-O kaempferol-3-O- $\beta$ -D-glucopyranoside, quercetin xylopyranoside, quercetin-3-O- $\beta$ -D-glucopyranoside, kaempferol O- $\beta$ -rutinoside and quercetin-3-O- $\beta$ -monoterpenoids (1, 8-cineole, camphor and  $\alpha$  sesquiterpenoid ( $\beta$ -caryophyllene),<sup>[12]</sup> gallic acid, quercetin, gentisic acid, rutin, epicatechin and ellagic acid are the major phenolic compounds isolated from leaves. Indole-3-acetic acid has been extracted from the roots The GLC study of castor oil showed the presence form of palmitic (1.2%), stearic (0.7%), arachidic (0.3 hexadecenoic (0.2%), oleic (3.2%), linoleic (3.4%), ricinoleic (89.4%). The seeds contain 45% of which consist glycosides of ricinoleic, isoricinoleic, stearic and dihydroxystearic acids and also lipases and a ricinine.<sup>[15,16]</sup>

## PHYTO-PHARMACOLOGY

### Antioxidant activity

It is concluded that *R. communis* seed extracts produced the antioxidant activity by using lipid per oxidation by ferric thiocyanate method and free radical scavenging effect on 2,2iphenyl-1-picrylhydrazyl radical (DPPH) and hydroxyl radical generated from hydrogen peroxide. The high antioxidant activity of the seed of *R. communis* at low concentration shows that it could be very useful for the treatment of disease resulting from oxidative stress. The responsible chemical constituent of *R. communis* which produce antioxidant activity are Methyl ricinoleate, Ricinoleic acid, 12 octadecadienoic acid and methyl ester. The *Ricinus communis* stem and leave extracts also produce antioxidant activity due to the presence of flavonoids in their extracts.<sup>[17]</sup>

### Antinociceptive activity

The methanolic leaves extract of *R. communis* possesses significant antinociceptive activity against acetic acid induced writhing test, formalin induced paw licking tail immersion methods in mice. The antinociceptive activity showed due to the presence preliminary Phytoconstituents like saponins, steroids and alkaloids. RCE (*R. communis* extract) and WSE (*W. somnifera* extract) demonstrated a reduction in paw swelling, arthritic score, and restoration of body weight and organ indices. Hematological parameters, serum inflammatory markers such as CRP and RF, and liver function markers of arthritic rats were significantly ( $P < 0.01$ ) ameliorated with RCE and WSE treatment. Both plants persuasively down-regulated IL-1 $\beta$ , IL-6, IL-17a, TNF- $\alpha$ , and RANKL and up-regulated IL-4, INF- $\gamma$ , and OPG relative expression as well as alleviating hepatic oxidative stress parameters. Histopathological and radiological findings revealed a marked reduction in tissue inflammation and bone erosion in extracts treated groups.<sup>[18,19]</sup>

### Antiasthmatic activity

The ethanolic root extract of *R. communis* is effective in treatment of asthma because of its antiallergic and mast cell stabilizing potential effect. Saponins has mast cell stabilizing effect and the flavonoids possess smooth muscle relaxant and bronchodilator activity; the apigenin and luteolin like flavonoids were generally inhibit basophil histamine release and neutrophils beta glucuronidase release, and finally shows in-vivo antiallergic activity. The *R. communis* ethanolic extract decreases milk induced leucocytosis and eosinophilia and possess antiasthmatic activity due to presence of flavonoids or saponins.<sup>[20]</sup>

### Antifungal activity

Various parts of *R. communis* including root, leaf and stems are known to have antifungal activity. Both methanolic and aqueous extracts of *R. communis* are found to be active against many fungal species. A study was carried out for testing the antifungal activity of *R. communis* extract against various fungal species, the maximum antifungal activity was shown against *Candida albicans*, and lowest activity was detected against *Alternaria solani*. One of the studies, showed that the methanolic extract has prominent inhibitory activity against *Aspergillus niger* and *Aspergillus fumigatus* and less activity against *Aspergillus flavus*. Another study, carried out with aqueous *R. communis* leaf extract have shown lowest activity against *Aspergillus fumigatus* and *Aspergillus flavus*. The above-mentioned studies confirm the antifungal activity of *R. communis* extract, and it may be a good source for identifying a new drug candidate for inhibiting the fungi.<sup>[21, 22]</sup>

### Anti-cancer activity

Some studies have been carried out using fractions with 100% ethanol, methanol and an aqueous phase which have shown activity against specific cancer cell lines such as melanoma, MCF7 (Breast cancer),

HepG2 (Hepatic cancer), PC3 (Pancreatic cancer), and cervical cancer. Both in vitro and in vivo studies have confirmed the anti-cancer activity of *R. communis* using various plant parts and ricin lectins. Anti-cancer activity of *R. communis* was studied and reported by several researchers. Initial studies revealed the cytotoxic effect of lectins from *R. communis* on three different cell lines HeLa cells, sarcoma 180 and human erythrocytes. Lin and Liu observed the increase in lifespan of the mice which is treated with ricin A. In one study, the aqueous extracts of *R. communis* was found to exhibit cytotoxic effects on A375 cell lines (human melanoma cancer cell lines) with IC50 value of 48 µg/mL. According to You and colleagues, the agglutinin 1 from *Ricinus*, resulted in rapid down-regulation of vascular endothelial growth factor-2 (VEGFR-2) and also caused apoptosis of endothelial cells in tumour blood vessels. Ohishi et al. have analyzed an alkaloid pyridine which was found to be effective against the β-catenin (WNT) signalling pathway, having an essential role in proliferation, differentiation and development of cells leading to cancer. Some other in vitro studies were carried out to test the cytotoxic effects of *R. communis* on various cell lines such as colon cancer, liver cancer, breast cancer, cervix cancer, ovarian cancer (OVCAR-5), skin melanoma (B16F10) and prostate cancer. At lower concentrations of about 100 µg/mL, the *R. communis* extract was tested against these cancer cell lines and was shown to be effective. The anti-cancer activity of *R. communis*, as revealed by several studies, clearly suggests that *R. communis* may be a good source for anti-cancer therapeutic compounds.<sup>[23, 24]</sup>

#### **Analgesic activity**

*R. communis* was found to possess potent central analgesic activity. Various studies have been conducted for demonstrating the analgesic activity of *R. communis* extract. It is studied and

proved that *R. communis* extract has typical central nervous system stimulant and neuroleptic effects. The stimulant effects such as hyperreactivity, memory improvement and clonic seizures are due to the alkaloid ricinine in *R. communis*. Ricinine is non-anxiogenic as it does not reduce exploratory behaviour of the brain. In another study, the analgesic activity of aqueous extract of *R. communis* root bark was evaluated against a standard drug diclofenac at a dose of 50 mg/kg. The doses of *R. communis* extract used are 100 and 200 mg/kg in Albino mice. Two methods were used for determining the analgesic activity, i.e., Eddy's hot plate method and tail immersion method. In one of the studies, the effect of methanolic extract of *Ricinus* leaves has proved to be having high antinociceptive activity. A dose of 150 mg/kg showed a gradient increase in the tail flick of mice from (2.900±0.194) in control at 0 min to (6.30±0.110) with *Ricinus* treated mice indicating the analgesic activity of *R. communis*.<sup>[18]</sup>

#### **Anticonvulsant activity**

Epilepsy is a pervasive disorder with seizure formation due to neuronal discharges of the brain. Some isolated compounds from *R. communis* have been tested for anticonvulsant activity and proved to be reliable epileptic. After electric shock treatment, all the animals exhibited convulsions. Animals receiving a dose of 60 mg/kg of a compound from *R. communis* seeds exhibited an inhibition of seizure to about 82% compared to a standard drug which exhibited an 8.89% seizure inhibition.<sup>[25]</sup>

#### **Anti-helminthic activity**

*R. communis* was studied for its anthelmintic activity in inducing paralysis and time taken to cause the death of worm. Both ethanolic and aqueous extracts were used for evaluating the anthelmintic activity. Aqueous *Ricinus* extract showed high activity at 100 mg/mL in less time when compared to ethanolic extract, i.e.,

8.50±0.64 (paralysis) and 31.50±1.25 (death) at a concentration of 100 mg/mL was demonstrated for aqueous extract. Thus the aqueous extract of *R. communis* was found to be having more anthelmintic activity.<sup>[26]</sup>

#### **Anti-fertility activity**

The anti-fertility effects of *R. communis* were studied in male rats which revealed a reduction of epididymal sperm counts. Main features observed after treatment with 50% ethanolic extracts of *R. communis* include alteration in motility and morphology of sperms was also affected. In another study, semen parameters have been observed wherein the suppression of testicular function is reported in male Wistar rats treated with *R. communis* (10 mg/kg). Clinical study, carried out by Isichei and colleagues, for antifertility effects in females with a single dose have prevented pregnancy for 12 months.<sup>[27]</sup>

#### **Laxative and uterine contracting**

Castor oil induces laxation and uterus contraction by involving ricinoleic acid activating prostaglandin receptors 2. Castor oil and ricinoleic acid induce contraction of the intestinal smooth muscle. Both gut and uterus motility is affected. Prostaglandin receptors 2 are proved to be potential targets for drugs to induce laxation.<sup>[28]</sup>

#### **Antiasthmatic activity**

In a study of *R. communis* had shown significant anti-asthmatic activity. *R. communis* exhibited the mast cell stabilising effect due to saponin content in its roots, whereas flavonoids are responsible for bronchodilation and smooth muscle relaxant activity. The anti-allergic activity was determined by in vivo studies which play a vital role in the treatment of asthma. The ethanolic extract was effective in reducing the milk induced leukocytosis and eosinophilia due to the presence of flavonoids and saponins.<sup>[29]</sup>

#### **Bone regeneration**

Oil of *R. communis* was used in various bone-related diseases in ancient period as a herbal and folkloric medicine. The diseases which used to be treated by *R. communis* include bone deformities, acute osteomyelitis, articular pains, and afflicted limbs. *R. communis* has the unique capacity of regeneration of bone without the formation of any scar following its damage. Formation of polyurethane resin promotes fibroblastic neoformation progressively replacing the bone from inside and around the porosities of the biomaterial in the absence of delayed inflammatory reaction without any signs of systematic toxic effects, as being observed both in rat alveolus and rabbit skulls. Biological properties of *R. communis* polyurethane can be improved by subsequently incubating in the synthetic body fluids. *R. communis* polyurethane blended with calcium phosphate could promote matrix mineralisation and can be of immense interest in the preparation of biocompatible materials, when compared with demineralised bone. The *R. communis* polyurethane has the advantage of slower reabsorption process. The animal study was performed for treatment of osteoarthritis by using *Lawsonia inermis* and *R. communis* in rats for 14 d and had shown a significant effect in treatment without any adverse effects A. All the above data confirmed the bone reformation activity of *R. communis*, and it may be a novel bone reforming substance for treatment of arthritis and osteoarthritis.<sup>[30]</sup>

#### **Mosquitocidal activity**

*R. communis* exhibited larvicidal effects against various mosquito larvae. Studies have been carried out on various species of mosquitoes such as *Anopheles gambiae*, *Anopheles stephens*, *Anopheles albopictus*, and *Culex quinquefasciatus*, with a mortality of nearly 100%. The lethal concentration of seed extract of *Communis* among various larval species is as follows: *Culex quinque fasciatus* (7.10 µg/mL)

>*Anopheles stephensi* (11.64 µg/mL)  
>*Anopheles albopictus* (16.84 µg/mL). Malaria is a life-threatening disease which is caused by parasites that are transmitted by the bites of certain species of infected *Anopheles* mosquitoes to humans. Despite an increase and growth in research to a large extent over the past 2 decades, malaria has been a worldwide epidemic leading to hundreds of thousands of deaths every year. According to WHO global estimate documents, about 2.7 million cases of malaria were reported and an estimated 627 000 deaths were seen in 2012 (WHO 2012). *Plasmodium falciparum* is known to exhibit resistance to various available antimalarial drugs. *R. communis* is found to have the highest activity against the *Anopheles gambiae* which is a vector for malaria. Both male and female larvae of *Anopheles gambiae* are susceptible to *R. communis* extracts. This activity was supposed to be due to the presence of two compounds ricinine and 3-carboxy-4-methoxy-N-methyl-2-pyridone. The larvicidal activity of the different extracts was found to be increasing with increase with the larval exposure. Extracts from *R. communis* have recorded highest mortality with a lethal concentration 50 (LC50) of 0.18 mg/mL. Apart from this, the extract from *Ricinus* was found to be effective against *Anopheles arabiensis* and *Culex quinque fasciatus*.<sup>[31]</sup>

### Antibacterial activity

Due to the increase in the incidence of infections in human beings with various clinical strains of bacteria and adoption of resistance against the antibiotics, there is a great need to find the reliable

Alternative sources to combat this so-called life-threatening issue of antibiotic resistance. *R. communis* and its phytochemicals have been found to have antimicrobial properties against various microorganisms. Some of the reported antimicrobial activity of the crude extract includes inhibition of various bacteria such as *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus mutans*, *Enterococcus*

*faecalis* and methicillin-resistant *Staphylococcus aureus*. The activity of the *R. communis* has been tested using various aqueous and solvent-based extracts. The different solvents systems used are ethanolic extract (hot and cold), methanolic extract, ethyl acetate extract, butanolic extract and so forth. The ethanolic extract was found to be most effective in a large number of the cases, and the highest activity was shown against *Staphylococcus aureus* with a MIC of 5 mg/mL. In one study, methanolic extract exhibited maximum activity against *Escherichia coli* and lowest activity against *Bacillus subtilis*. A study, conducted for testing the antibacterial activity indicated that *Ricinus* aqueous extract had shown the highest activity against *Staphylococcus aureus* and lowest activity was shown towards *Klebsiella pneumoniae*. A randomised clinical study, against bacterial pathogens, has shown the *R. communis* activity as a complete cleanser solution. Inhibition of biofilm formation is due to the presence of sodium ricinoleate in *R. communis* oil, which damages cell wall and leads to cell death by loss of cytoplasmic components. By the above results, it can be concluded that *R. communis* can be a good source for an antibacterial drug against various bacterial pathogens.<sup>[32]</sup>

### Anti-diabetic activity

Diabetes is a chronic disease that occurs either when the pancreas does not produce insulin required by the body or due to development of insulin resistance. The number of people who have diabetes has risen steeply from 108 million cases to 422 million in 2014 (WHO).<sup>[33]</sup> In 2012 diabetes was the sole cause of 1.5 million deaths (WHO 2015).<sup>[34]</sup> A study was conducted to test the antidiabetic activity<sup>[35]</sup> of ethanolic extract of *R. communis* roots and have been found to be effective against hypoglycemic rats. After treating alloxan diabetic rats for 20 d with a single dose of 500 mg/kg body weight (effective dose), lipid profile was observed by collecting blood on day 0, day 10 and day 20 of the experiment. This study

demonstrated the significant lowering of fasting blood sugar to almost normal level and an increase in insulin levels, thereby causing improvement in lipid profile and body weight as well. The decrease in blood glucose levels was from (379±72) mg/dL (Diabetic rat) to (149±11) mg/dL (control). Another in vivo study, on alloxan-induced diabetic rats, had reported that blood glucose levels decreased from 390.0 to 148.5 mg/dL after treatment with *Ricinus* extract, approximately 61.97% reduction in blood glucose for over a period of 7 d. These studies suggest the potential of *R. communis* as a therapeutic agent for diabetic control.

### CUNCLUSION

*R. communis* medically used and potent medicinal plant amongst all the many more of medicinal plants. This plant has many more pharmacological activities reported in the present review article reported the very useful therapeutic value of *R. communis* is much more. *R. communis* important source of many compounds with their chemical structures these chemical structure shows the various pharmacological properties. The fatty acids profile and triglycerides demonstrate that ricinoleic acid and triricinolein are the predominant components in the oil. Bioactive compounds including polyphenols, phytosterols, and tocopherols present in castor oil have the pharmacological activity like antioxidant, anti-ulcer, anti-diabetic, anti-bacterial activity, Mosquitocidal activity etc. The low acid value also accounts for castor oil stability. As it has been reviewed here, castor oilseed has high percentage of monounsaturated fatty acid and shares higher similarities of with other vegetable oils. The present of chemical constituents and pharmacological activities proved that the plant valuable capacity for the build of new good effective drugs in future this beneficial for future aspect research scholar.

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