International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 02 ISSUE 04 Pages: 35-39
SJIF IMPACT FACTOR (2022: 5. 705)
OCLC – 1121105677 METADATA IF – 5.654
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijll



Research Article

# BIOECOLOGICAL PROPERTIES AND SIGNIFICANCE OF THE ORDINARY CASTONE (RICINUS COMMUNIS)

Submission Date: April 20, 2022, Accepted Date: April 25, 2022,
Published Date: April 30, 2022
Crossref doi: https://doi.org/10.37547/ijmscr/Volume02Issue04-05

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## ABSTRACT

The article provides information about the biological and ecological properties of the castor bean, its chemical composition, agricultural technology, application in the aviation industry, soap, leather, paint and varnish production and medicine.

## KEYWORDS

Castor bean, poisonous plant, oilseed, ornamental plant, ricin and ricinin.

## INTRODUCTION

The flora of Bukhara since 1995-2000, due to renovation and restructuring, has been largely changed, many old plant species have been destroyed or on the verge of destruction and many new species

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have been brought. In addition to the above, according to our observations, over the past two decades, the vegetation of Bukhara has been updated with new species, for example: Weeping willow (Salix), white willow (Salix alba), Apple-bearing Maclura (Maclura pomifera), Camel thorn (Alhagi) have changed to Rumex (rumex chalepensis), Cardaria (cardaria repens), Garden yucca (yucca flaccida), Lenkoran Albizia (Albizia julibrissin Durazz.), Broom-haired Bassia or Cochia volosolistnaya (Kochia scoparia var. trichophylla (hort. ex Voss) L.H. Bailey.), Common castor (Ricinus communis L.), Caesalpinia Gillis (Caesalpinia gilliesii (Wall. ex Hook.) D. Dietr.) [5]. Castor oil is an oilseed, medicinal and ornamental garden plant. The main cultural centers are India, Brazil, Argentina, African countries, China and Iran. In Egypt, she has been divorced for more than four thousand years. Castor oil is a poisonous plant that was imported in the XIX century from India and quickly spread. The cultivation of castor oil in Russia began in the middle of the 18th century, in small quantities. And today the total acreage of castor in Russia is more than 130 thousand hectares. In tropical and subtropical areas , castor is an evergreen shrub up to 10 m high . In the conditions of culture in temperate countries (Russia and others), it is an annual plant up to 2-5 m tall. The stems are erect, branched, hollow inside, pink, red, purple or almost black, covered with a bluish waxy coating.

The leaves are large, 30-80 cm long, deeply cut, sometimes separate, pointed, unequally toothed, dull green with petioles 20-60 cm long. In summer, racemose terminal or axillary inflorescences of green with a red tint of flowers appear. Castor is a monoecious plant: male and female flowers are located on the same plant; male in the lower, and female in the upper part of the inflorescence axis. The flowers are small, light cream or white. Stamens are numerous, collected in branched bundles. Pistils with a three-part column and fringed stigmas are red, crimson or light yellow.

The fruit is a spherical naked or prickly capsule up to 3 cm in diameter. Located between the leaves, the fruits give the plant a decorative appearance.

Materials and methods

Mature seeds have an oval shape. On the dorsal side they are convex, on the abdominal side they are flatter, there is a longitudinal seam in the middle. The seed shell is smooth, shiny, variegated, mosaic. Depending on the castor variety, the mosaic can be brown, pink, light pink, contrasting against the background of the seed. The background color varies from gray to copper-red. Thus, the seed resembles a tick in its shape and mottled color, hence the corresponding name of the plant. At the top of the seed there is a seedling, easily falling off and having the appearance of a white appendage.

Castor seeds contain from 40 to 60% of fatty oil. The seed kernel contains up to 17% of proteins, including

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toxalbumin ricin, a highly toxic substance. Ricinin, a pyridine alkaloid with a cyangroup among the substituents, also contained there in an amount of 0.1-1%, is poisonous. Lush "palm trees" of castor oil are increasingly found in the city. They also meet in the city of Bukhara. There is no doubt that the castor grows quickly, it is not picky in care, it is beautiful. But there is an unobvious danger in castor oil, especially in its fruits. Castor oil, or castor oil, is obtained from the beans of the plant. It is used in medicine, cosmetology, chemical and automotive industries. Ricin is 6 times stronger than cyanide.

In Russia, castor oil is grown as an oilseed crop in the Rostov region, Krasnodar and Stavropol Territories. In other regions, it is just an ornamental plant, a garden decoration. But with all the advantages, castor oil can cause irreparable harm, since all parts of this plant are poisonous. Castor venom is represented by two substances: ricin and ricinin. Ricin is contained in the seed shell - this is the most poisonous part of the plant.

Ricinin contains all the other parts: leaves, seeds and cake. Its content for flowering decreases in leaves, and increases in flowers. The lethal dose of castor seeds is 0.3 mg / kg of weight (for adults - 20 pieces; for children - 6). An adult is unlikely to chew the seeds of an unknown plant. But it's a completely different matter when children come into contact with him. Their natural curiosity in the case of castor turns into an irreparable disaster. Animals, having tasted the leaves of this plant once, then bypass it all their lives. The death of animals occurs when using cake from spent castor seeds. The danger is that the signs of poisoning appear late. It is very difficult to associate the intake of ordinary seeds with poisoning. There are characteristic signs after a day, or even three. The poison ricin causes agglutination - the gluing of red blood cells.

## RESULT AND DISCUSSION

As a result, capillary circulation is disrupted in all organs. They are clogged with blood clots, hemorrhages and erosions appear. All this leads to bleeding, the work of organs is paralyzed. The clinical picture resembles endotoxic shock. The poison from castor oil is death to the capillaries. With a hemorrhage in the brain, deafness appears, then loss of consciousness, convulsions are possible. Death occurs on day 6-7. Until now, castor oil is used to produce lubricants for the aviation industry, used in soap, leather and paint production. The cake is used for the production of glue and nitrogen fertilizers. The appearance of the famous castor oil is also associated with castor oil. For pharmacy purposes, castor oil has a huge benefit. The oil obtained from the seeds is part of Vishnevsky ointment, an aerosol for the treatment of the throat, a preparation for patients with urolithiasis. It is a mild laxative to eliminate constipation and protect the stomach from poisoning. Ingestion of plant seeds also causes enteritis, vomiting and colic, bleeding from the gastrointestinal

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tract, violation of the water-electrolyte balance. The harm to health is irreparable, the survivors cannot fully restore their health, which is explained by the ability of ricin to irreversibly destroy human tissue proteins. Inhalation of ricin powder similarly affects the lungs. Ricin has been investigated in some countries as a potential weapon of mass destruction and sabotage poison. Medical castor oil is a fraction obtained by cold pressing. To destroy the ricin, the oil is treated with hot steam. Ricin is a chemically unstable substance and irreversibly denatures when heated to 80 ° C. Oil is a thick viscous liquid of pale yellow color with a characteristic odor. It contains up to 85% of the triglyceride of ricinoleic acid. The rest of the triglycerides are oleic (9%), linoleic (3%) and various marginal acids (3%). Due to the presence of ricinoleic acid triglyceride, castor oil, unlike other vegetable fats, is soluble in 95% ethyl alcohol solution.

Castor oil is a classic laxative. It is part of some liniments, for example, balsamic ones, which have antiseptic properties and the ability to accelerate tissue regeneration.

Technical grades of castor oil are used in various fields of industry. Its high viscosity, which persists with increasing temperature, and relative inertia make this oil an exceptionally valuable lubricant for high-powered internal combustion engines (aviation, model), as well as a component of special lubricating mixtures.

Castor oil is cultivated mainly for the sake of seeds (Semina Ricini vulgaris, Semina cataputiae majoris), from which castor (castor or ricin) oil (Oleum Ricini) is extracted. Castor is bred in gardens as a fast-growing ornamental plant. It is good on the lawn in single planting or in groups (3-5 pieces) without other plants. In mixed groups, it does not give the proper effect. Castor oil can be used to decorate low walls.

The plant is sown in April in peat-bearing pots, later transplanted into clay pots (1 liter). At the end of frosts, they are planted in the ground without breaking the earthen coma. Castor grows well in sunny places and humus-fertilized soils with regular watering.

Previously, several species were isolated in the monotypic genus of castor, including the tree-like or African castor (Ricinus arborescens Desf., or Ricinus africanus Willd.), interesting because its leaves served as food for the caterpillars of the Saturnia cynthia butterfly, producing yellow silk.

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