

Various Uses of Castor (*Ricinus communis* L.)

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Castor plant (*Ricinus communis*) is from the family Euphorbiaceae and grows wild in varied climatic conditions. The plant produces castor seeds that contain up to 50 % castor oil by weight. The oil produced from this crop is considered to be of importance to the global specialty chemical industry because it is the only commercial source of a hydroxylate fatty acid. The oil can easily be extracted from castor seeds and find its use in a multitude of sectors such as medicine, chemicals industry and in other technologies. The demand for castor oil and its products in the world market has been on the steady increase partly due to their renewable nature, non-competition with food, biodegradability, low costs, and eco-friendliness. It is now estimated that the oil has over 700 industrial uses and the uses keeps on increasing.

In 2020-21, World major producing countries are India (16.47 lakh tonnes), Mozambique (0.72 lakh tonnes), Brazil (0.35 lakh tonnes), China (0.21 lakh tonnes), Thailand (0.12 lakh tonnes) and Myanmar (0.12 lakh tonnes). Area under castor reported during 2023-24 was 9.00 lakh ha (22.24 lakh acres) as against 7.94 lakh ha (19.62 lakh acres) during the same period in 2022-23. Among states, Gujarat is leading with 6.70 lakh ha (16.55 lakh acres) under castor followed by Rajasthan 1.84 lakh ha (4.55 lakh acres), Andhra Pradesh 0.34 lakh ha (0.85 lakh acres), Odisha 0.04 lakh ha (0.10 lakh acres) and Karnataka 0.02 lakh ha (0.05 lakh acres). According to Government 3rd advance estimates, all India castor production in 2022-23 is at 18.70 lakh tonnes.

The increased interest of substitution of conventional fuel by bio fuels, volatile crude oil prices, higher demand from Europe, China and the US, and growth of key enduse industries including cosmetics and lubricants are expected to drive the global castor oil and derivatives market. On the other hand, threat from other vegetable oils in terms of price and application, and high dependency on seasonality may hinder the market growth. Some major companies operating in the castor oil and derivatives global

market are: Thai Castor Oil Industries Co. geographical location and the method of extraction. Like other vegetable oils, castor oil exists as a mixture of saturated and unsaturated fatty acids attached to a glycerol. In the mixture of castor oils fatty acids, ricinoleic acid accounts for about 90 % of the mixture with other components in small proportions of not more than 5 %. Castor oil is extracted colourless to very pale-yellow viscous liquid with a distinct taste, mild odour and it boils at 586 K. The hydroxyl group in ricinoleic acid account for the unique properties of castor oil. For instance, the oil has relatively high viscosity and specific gravity; it is soluble in alcohols in any proportion and has limited solubility in aliphatic petroleum solvents. In addition, the polar hydroxyl group in castor oil makes it compatible with plasticizers of a wide variety of natural and synthetic resins, waxes, polymers and elastomers.

India has a history of using different plants in its indigenous systems of medicine (Ayurveda, Unani and Siddha) that dates back to 5000 years. Ayurveda records over 8000 herbal remedies. About 6000 plants were used in traditional, folk and herbal medicines in India. Different parts of the plant or oil from castor can be used as a base material in most of the medicinal treatments. Modern research backs up some of its traditional uses, including laxative effects, anti-inflammatory properties, and the ability to help induce labor.

While studies continue to investigate other potential health benefits, castor oil is considered safe if used as directed, and can be found in a range of skin and hair care products sold today. Castor oil is a common ingredient in many beauty products. It's rich in essential fatty acids that moisturize the skin, and research continues to study how their properties may be effective in treating common skin conditions.

Nutrition Information

A one-tablespoon serving of castor oil contains:

- Calories: 120

- Protein: 0 grams
- Fat: 14 grams
- Carbohydrates: 0 grams
- Fiber: 0 grams
- Sugar: 0 grams

Laxative Properties

One of castor oil's most traditional uses is to stimulate digestion, relieving temporary constipation. Modern research has found that this effect is due to the oil's high levels of ricinoleic acid, an omega-9 fatty acid that acts as a natural laxative.

Anti-Inflammatory Effects

Studies show that castor oil's ricinoleic acid reduces swelling and pain caused by inflammation. Research suggests that, when applied to the skin, castor oil may reduce arthritis symptoms more effectively than prescription topical treatments. More studies are needed to confirm this effect in humans.

May Heal Wounds

Castor oil's fatty acids are natural humectants, substances used to moisturize the skin by preventing

water loss. This effect can promote good skin health, relieve dryness, and soothe skin inflammation.

It may also have the potential to accelerate wound healing. Castor oil is a triglyceride that has antibacterial and antimicrobial properties. Research shows that, when applied to the skin, it may prevent infection, reduce inflammation, improve localized blood flow, and shed damaged skin cells – all of which help skin's healing process.

Treats Some Skin Conditions

Castor oil can benefit overall skin health, but may treat specific skin conditions as well. Though there's a lack of clinical research, its combination of antibacterial, anti-inflammatory, and moisturizing effects is thought to help treat some causes of acne. One study showed that castor oil also fights fungal infections, which may help relieve hard-to-treat fungal acne. Other studies have found castor oil helpful in the treatment of melasma, dandruff, and ringworm.

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