

Ricinus communis

[Synonyms : *Ricinus inermis*]

CASTOR OIL PLANT is an evergreen shrub or tree (annual in temperate areas). Native from tropical eastern and north-eastern Africa (including Zimbabwe) to the Middle East, it has green flowers with many yellow stamens.

It is also known as *Adade nkuruma* (Twi), *Amanaku-maram* (Tamil), *Amerikansk Olieplante* (Danish), *Arandi* (Hindi, Marathi), *Avanakka* (Malayalam), *Beed-anjeer* (Persian), *Bherenda* (Assamese, Bengali), *Bofareira*, *Carrapateira* (Portuguese), *Castor*, *Castor bean*, *Castor oil*, *Castor oil bush*, *Cawapate* (West Indian), *Common castor-bean*, *Common ricinus*, *Diveli* (Gujarati), *Endaru-tel* (Singhalese), *Eranda* (Sanskrit), *Erandam* (Malayalam), *Eri* (Assamese), *Evandamu* (Telugu), *Gulo* (Ethiopian), *Hands of Christ*, *Huile Cawapat* (West Indian), *Huile de Ricin* (West Indian), *Jada* (Oriya), *Jarak* (Javanese, Malay, Sundanese), *Jonah's gourd*, *Khurwah* (Arabic), *Koli* (Hawaiian), *Mahung* (Thai), *Man's motherwort*, *Maskriti* (Creole), *Mexico seed*, *Mole bean*, *Mole plant*, *Mwariki* (Kikuyu), *Oil nut*, *Oil plant*, *Palma Christi* (English, German), *Palms of Christ*, *Ricin* (English, French, Swedish), *Ricino* (Canary Island), *Ricin obyčajný* (Slovak), *Rignu* (Maltese), *Rizinus* (German), *Sittamanuk* (Tamil), *Skočec obecný* (Czech), *Steadfast*, *Stedfast*, *Tang-tangan* (Filipino/Tagalog), *Tel-endaru* (Singhalese), *White castor nut*, *Wild castor oil plant*, *Wonder tree*, and *Wunderbaum* (German).

The reddish-brown capsular fruit explode when ripe dispersing the seeds over several feet.

Previously boiled for at least 2 hours the seeds are pressed to obtain a colourless to dark green oil. The remaining waste cake is subjected to steam treatment to destroy further poison.

Warning – the whole plant (seeds particularly) is poisonous apart from the oil and must not be taken internally. For a child one seed (bean) is said to be fatal. The seeds can cause (after several hours, or even days) a burning sensation in the mouth, thirst, stomach pain, gastroenteritis, diarrhoea, weak pulse, general weakness, nausea, vomiting, blurred vision, dizziness, convulsions and death. Chewed seeds are definitely lethal but seeds swallowed whole may not be as their hard outer coating can prevent the release of poison.) The leaves can cause dermatitis. The oil in large doses can be a severe purgative and can cause wind and vomiting. The plant, untreated seeds or untreated residue from processing the plant are extremely poisonous for many animals, especially livestock – although horses and game-birds appear to be immune.

Communis means 'common, general or growing with'.

In 18th Century Jamaica the plant seems to have been called *Agnus Castus* and from this came the name *Castor*. As a native of India the plant acquired ancient Sanskrit names of which *Eranda* is said to be the oldest and most commonly known.

The castor oil plant has been cultivated for at least 6,000 years. Records, not least those of the Greek historian Herodotus (c.485-425 BC) mention the ancient Egyptians' use of the oil extracted from the seeds. The importance of the plant in Egyptian life is illustrated by the fact that seed remains have been found in both pre-dynastic graves (dating back to about 4000 BC) and some Egyptian tombs. Roughly 400 years later Strabo (c.60 BC-20 AD) who was a Greek geographer and compatriot of Herodotus, also recorded that the ancient Egyptians used the oil in their lamps and those living in the marshes used it as a base in

ointments with which they anointed their hair and bodies. Throughout a large part of the period covered by the ancient Egyptian civilization castor oil featured in the important Middle Eastern trade in plant oils. Both the Greek philosopher Theophrastus (c.372-c.287 BC) and the 1st Century AD Greek physician Dioscorides give a description of the plant and the latter explains the process used at that time for the extraction of oil. Dioscorides also adds that not only is this oil unsuitable for food and that it is confined to external use medicinally but also that the seeds themselves are an extreme purgative.

From the Middle East the plant eventually found its way along the various trade routes to India, some south-eastern Asian countries such as Malaysia, and to China. It is referred to in literature of the T'ang dynasty (618-906) which could imply that it had been introduced in that period by the barbarians. Although it did come into medicinal use (in India for example the oil is not only believed to have been taken as a purgative but also applied externally as a treatment for rheumatism) authorities believe that it also served as a lighting oil in Asia. Some older reports also suggest that some authorities believed too that the Chinese found a way of neutralizing the oil's purgative properties in order that it could be used safely in cooking.

At some point the plant reached North America and there records show it was absorbed into the Navajo tribe's practices as they believed it offered protection from the spirit of the bear. For many North American tribes including the Navajo it also had more pragmatic value as a source of medicine. For the Seminole, Cherokee and some of the Tohono O'Odham tribes it provided a purgative. Part of the Tohono O'Odham also used it to ease headaches (as did the Hawaiians apparently) and the Navajo tribe prescribed it for their women as a contraceptive. It was applied to skin disorders as well by the Diegueño, Cherokee, some of the Tohono O'Odham and the Cahuilla Indian tribes.

Use of this oil in Europe seems to have fluctuated over the centuries. From old records it was certainly a known medicine during the early Middle Ages and was obtained from the East, particularly India. In the 16th Century the plant was popular in English gardens and John Gerard (1545-1612) the English, barber-surgeon and herbalist (the latter as a charlatan for many authorities) mentions in 1597 its use externally in the treatment of skin diseases. However for reasons it is understood are as yet unknown supplies in the European Continent diminished for about 150 years and its local cultivation in Europe as a medicinal plant also dwindled. Only small supplies of seed and oil were obtained from Jamaica which goes some way to explaining this riddle. Then in 1764 it would appear that the Europeans observed the use of the seed oil in the West Indies and re-discovered it as a medicinal purgative. The practice was adopted and it led to formal recognition in the 1780s through to this day in many national pharmacopoeias in the Western world.

It is interesting to note that the believed cause of the plant's poison, ricin (a protein) has been known since 1880. However it was only at the turn of the 20th and 21st Centuries apparently that a further protein also in the plant has been identified as an additional significant factor. Authorities suggest that failure to distinguish between these two proteins could account for assumed inadequate processing of the seeds.

The poison's lethal nature is illustrated dramatically in a political assassination that took place in London in 1978. A Bulgarian broadcaster, Georgi Markov (1929-1978), died after he had been stabbed in the leg with the metal ferrule of an umbrella which later turned out to be formed from a small, perforated sphere. The English coroner who presided over the inquest which followed was satisfied that this ferrule had contained ricin, one of the poisonous proteins in the castor oil plant.

Some of the oil's more unusual and multitudinous uses in recent times have included a contribution to the cleaning of works of art, the colouring of butter, and the manufacture of fly papers, carbon paper, and typewriter and printing inks. The dehydrated oil has also

been found suitable for use in paints and varnishes. Another application is its use as a high grade lubricant for machinery, cars and aero-engines, not least because of its viscosity and low freezing point. This oil has been used to manufacture resins and plastics. Turkey-red oil has been used for dyeing cotton fabrics and other textiles. It has been used in the leather dressing process for preserving and has also been applied for waterproofing fabrics. The oil imparts a transparency to manufactured soap - and it is also used by the cosmetics industry in cosmetic bases and lipsticks. The toiletry industry has valued the oil too as an ingredient in hair-loss prevention and anti-dandruff preparations. For the pharmaceutical industry the oil can be used in preparing laxatives, ointments and ophthalmic drugs. It has also provided an ingredient in a caulking medium used on boats in Malaysia.

Unprocessed seed cake (left after oil extraction) has been applied as fertilizer and burnt as fuel. Locally it has also provided a pesticide especially suitable apparently for white ants.

Processed seed cake ie. without residual poisons, can be employed as animal feed.

(Although unprocessed oil cake has often been considered too dangerous to feed to livestock some authorities have claimed that if it is heated to 115⁰C it can be fed safely to pigs). Processed seed cake is also spread as a fertilizer (known to some as Poonac).

It is probably assumed by most people that silkworms only feed off mulberry leaves. However there are many different kinds of silk-producing worm and at least one of them eg. the Eri silkworm, can be fed on the leaves of the castor oil plant.

In western Africa some tribes long believed that anyone practising witchcraft could be winkled out if brought into the vicinity of castor oil plant leaves, fruit or dried seeds which were burning on a special fire. The perpetrator's unparalleled dislike of the smell would enable him to be identified immediately.

More mundane applications were common in the Caribbean where the oil was used in body painting and hair dressing.

In Java (now part of Indonesia) small amounts of the flowers have been added to food, raw or during cooking, as a flavouring.

For many countries today (including the Canary Islands) castor oil plant is more familiar as an ornamental plant.

Notwithstanding the foregoing it should perhaps be mentioned that by the 1990s research programmes were underway in Western countries to find an alternative source of the chemicals obtained from this seed oil upon which so many of their manufacturing processes and products depend. Several alternative plants from different families were being investigated, including lesquerella (*Physaria fendleri*). Not least of the considerations was/is commercial cultivation. Castor oil plant is uneconomic to farm not least because of handling difficulties caused by the shattering seeds when the fruit are ripe and the plant's poisonous qualities. – so much so where the latter is concerned that American farmers even had to stop growing it.

Medicinally, the leaves have been used in local remedies in west Africa for worms, and also for easing headaches and earaches. They have also provided a treatment for bilharzia. In the Caribbean on the other hand poultices of the leaves were used to ease inner pain. The oil was taken as a purgative (not least in India where, when it first reached there, it superseded plumbago (*Plumbago auriculata*) previously used for that purpose) and used in the treatment of gonorrhoea. In northern India a root paste poultice is applied today to boils. Both Chinese and Malaysian medicine apply the oil externally to treat skin disorders, and in some parts of south-eastern Asia heated leaves have been added to poultices in remedies for gout, swellings and sprains.