



KAPURIYA ENTERPRISE

IMPORT-EXPORT
SPICES AND OILSEEDS

Physical properties of Castor Seeds

Abstract

Castor beans (*Ricinus communis* L., Euphorbiaceae) have been used traditionally by women in many countries for birth control. In order to verify the contraceptive effect of castor beans, adult female rabbits were treated orally with chunks of castor beans at the level of 7.5 mg/kg body weight daily for at least ten consecutive days. Mating with proven male rabbits was allowed after the last treatment. Treated and untreated (control) female rabbits were inspected for pregnancy, body weight, and any apparent side effects. The treatment resulted in a 4.3 fold decrease in pregnancy of treated female rabbits compared to the untreated control group. All treated female rabbits experienced transient mild diarrhea and loss of body weight. The inhibitory effect of castor beans on pregnancy was reversible. This observation was detected by remating four females who were treated with castor beans previously. Three of these rabbits became pregnant and delivered at term (after 32 days), whereas the fourth rabbit experienced midgestation abortion (day 16 of pregnancy). These results suggest a reversible contraceptive effect of castor bean in female rabbits.

Introduction

The castor bean plant (*Ricinus communis* L., Euphorbiaceae) is a herbaceous annual plant that is cultivated in climate areas of the world. The plant is a large shrub which can attain a height of 12 ft and has large palmate leaves. The smooth seed is mottled greyish and brown, but it varies considerably in color (Tyler et al., 1988). Castor beans contain ricin, a potent toxalbumin that interferes with protein synthesis and is one of the most toxic substances known (Osborn, 1905; Rumack, 1989).

People in many parts of the world ingest castor beans as a cathartic, an emetic, a treatment for leprosy and a cure for syphilis (Scarpa and Guerci, 1982). About contraceptives uses of castor beans, it has been reported that some women in India and Korea have taken castor beans to prevent subsequent pregnancy (Mahli and Trivedi, 1972; Farnsworth et al., 1975; Woc et al., 1981). In Algiers, women used to dip castor beans in the warm blood of a rabbit before ingesting the beans to prevent pregnancy (Brondegaard, 1973). In Egypt it has been reported that there will be no pregnancy for at least nine months if a woman takes one castor seed after the child is born (Mahli and Trivedi, 1972). The objective of this work was to investigate the effect of castor beans on the pregnancy of rabbits.

Origin

According to available literature, castor is indigenous to Eastern Africa and most probably originated in Ethiopia. It is also possible that castor is originated in the tropical belt of both India and Africa. In India, castor is known from very early days and is referred to in Sanskrit literature. Castor plant belongs to Euphorbiaceous family. Many cultivars or types

Castor belongs to the genus *Ricinus*, a member of the Euphorbiaceous, which contains a vast number of plants mostly native to the tropics. The genus *Ricinus* is considered to be monotypic and *R. communis* is the only species, which includes many polymorphic types. The cultivated types are dwarf annuals. Castor plants have well developed root system with thick horizontal roots. Tap root looks like extension of the stem below the soil. The stem is erect, circular in section, partially hollow, glabrous, and smooth with good branching. Stem is either red or green or with shades of both. The stem is marked by well-defined nodes from each of which a leaf is arises. The lower internodes are shorter, and their length increases with height. Leaves are alternate, large, and palmate with 5-11 lobes acuminate margins notched, serrate or indented. They are carried on long stout petioles. The inflorescence is borne terminally on the main and lateral branches. Flowers are large, in terminal sub panicled racemes, monoecious, apetalous, the upper portion of the raceme being occupied by the female flowers and the lower by male flowers The whole inflorescence may reach a length of 90 cm. The flowers are wind and insect pollinated and from 5 to 46 % natural pollination occurred. The fruit is round glaucous capsules with three projecting sides covered with tough spines or smooth, 3 loculed and three seeded. Seeds are albuminous, anatropous, broad, oval, compressed with a marked caruncle and longitudinal raphe. The testa is thin, brittle, varying in colour and mottling. Below the testa is thin legmen, covering a whitish oily endosperm containing the embryo.

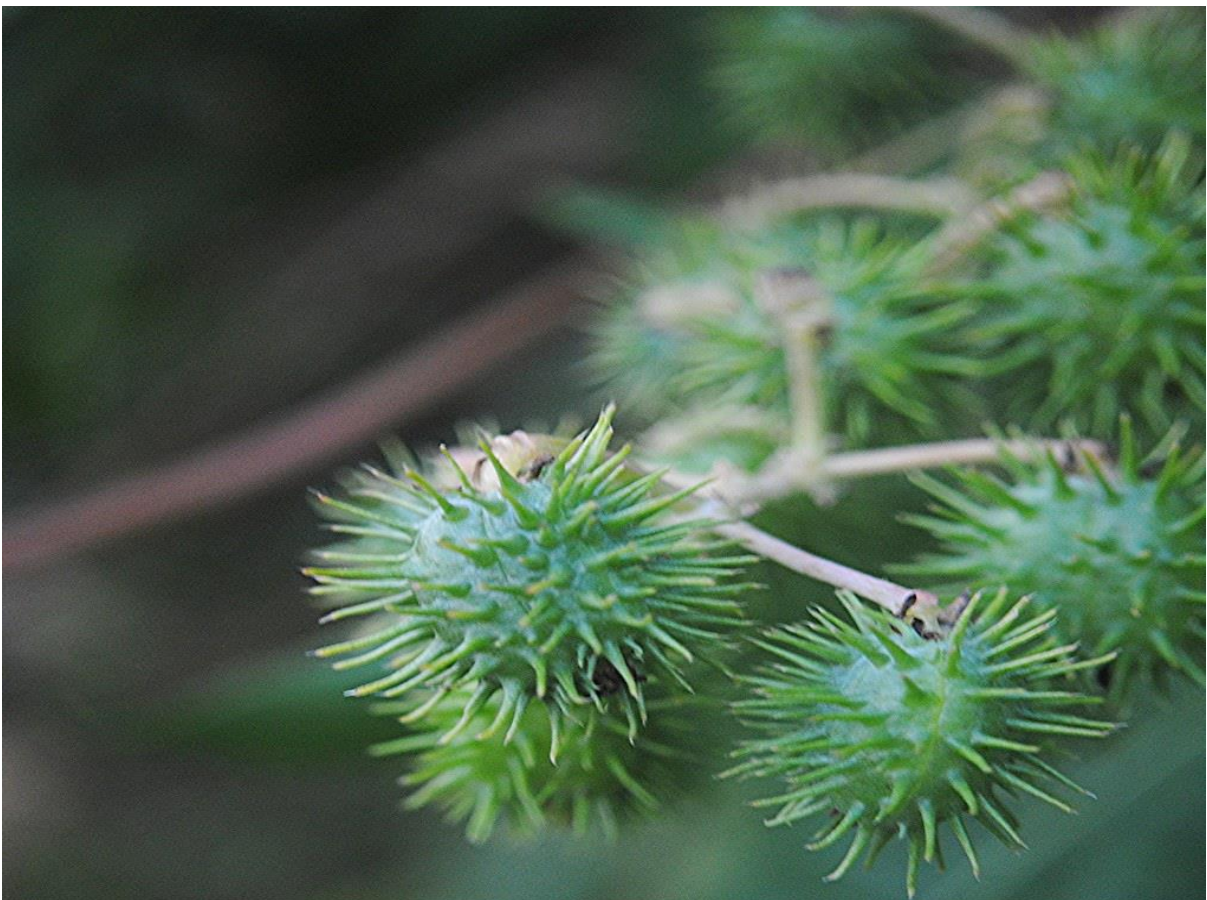
Area and distribution

Castor is grown under varied climatic conditions viz., tropical, sub-tropical and temperate. However, its cultivation is largely confined to the countries lying between 52' N to 40' S latitude. The major countries growing castor are India, China, Brazil, USSR, and Thailand.

India ranks first in the world in respect of acreage (5.4 lakh hectares) and production (2.6 lakh tonnes) in the world. It contributes about 28 % of the world's acreage and 36 % of total output. Following Brazil, India occupies the next prestigious market position in the world's castor market and each year exports substantial part of its total produce to earn foreign exchange. The major castor growing states in the country are Gujarat, Andhra Pradesh, Tamil Nadu, Orissa, and Rajasthan. It is also grown in the states of Uttar Pradesh, Maharashtra, Karnataka, Madhya Pradesh, and Bihar.

The Gujarat state ranks first position in the country with respect to area and production and productivity among all major castor growing states in the country because majority of farmers are adopting hybrid varieties and cultivating this crop as irrigated crop (In river belt and dry farming areas, it is taken as rainfed crop). In Gujarat, it is grown in an area of about 3.5 lakh hectares with an annual production of about 6.8 lakh tonnes of castor seeds. The most important castor growing districts in Gujarat are Mehsana, Sabarkantha, Banaskantha, Kutch, Ahmedabad, Kheda, Vadodara, Rajkot, Jamnagar and Gandhinagar. In other districts except Valsad, Dangs and Navsari districts, it is cultivated in more or less area. Gujarat developed the hybrid variety first in the world.

CASTOR Plants







CASTOR SEEDS



