

Triacylglycerols (TAG), an energy storage substance, exist in the seeds of many eukaryotic plants. TAG is hydrolyzed by lipase to produce free fatty acids and corresponding glycerides, in which ...

Soybean is an important oilseed crop and major dietary protein resource, yet the molecular processes and regulatory mechanisms involved in biosynthesis of seed storage substances are not fully ...

2016). The seed storage reserves such as protein, triacylglycerol, (TAG), and starch, are filled during the seed development, which critically determine seed quality traits of many crops. Understanding of the seed development and storage substance filling into the seed thus is essential for enhancement of crop

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and AtbZIP25 bind to the promoters of seed storage protein genes, and activate transcription in a synergistic manner with other TFs such as ABI3 and bZIP53 (Lara et al. 2003, Alonso et al.

Seed maturation or seed filling is a phase of development that plays a major role in the storage reserve composition of a seed. In many plant seeds photosynthesis plays a major role in this process, although oilseeds, such as castor (*Ricinus communis*), are capable of accumulating oil without the benefit of photophosphorylation to augment energy demands.

In Nigeria, detoxified castor seed is used as a food condiment (Salihu et al., 2014), a substance that benefits human vision. Limited information is available on the use of castor oilseed

Castor bean seeds have long been known for their toxicity. They are the source of the most potent phytotoxin known, the protein ricin. Moreover, the toxic alkaloid, ricinin, is also found in the castor bean; however, this compound is different from ricin in that it is not as toxic and can easily be removed from the castor cake. 2.1. Ricin

In recent decades, the mechanistic details of plant LD biogenesis have become clearer (for review see Chapman et al., 2019; Choi et al., 2022; Guzha et al., 2023) iefly, LD biosynthesis occurs in a three-step process: (i) TAG synthesis at the ER, (ii) TAG accumulation between the two leaflets of the endoplasmic reticulum (ER) membrane leading to the formation ...

Main energy storage substances in castor seeds

The acid, anisidine, iodine, viscosity, and saponification values indicate that castor has good oil quality compared to other vegetable oils. Castor oil composition is ...

Castor seeds contain 50% oil on average and this percentage is quite high compared to the other oil seeds [17,18,19,20]. This high usage potential of castor oil has increased the *Ricinus communis* L. cultivation in many countries. High seed and oil yield providing new genotypes of castor plants have been developed.

The castor plant (*Ricinus communis* L.) has been known since time immemorial in traditional medicine in the pharmacopeia of Mediterranean and eastern ancient cultures. Moreover, it is still used in folk medicine worldwide. Castor bean has been mainly recommended as anti-inflammatory, anthelmintic, anti-bacterial, laxative, abortifacient, for wounds, ulcers, and many ...

A castor bean seed with large and persistent endosperm contains high amounts of storage lipids (ca. 50-60%) and is often considered as a model material to studying seed biology. In oleaginous seeds, due to the rich oils which could seriously affect immunoprecipitation and DNA isolation, it is often difficult to carry out a successful ChIP ...

Nowadays, castor oil production is the most important use of the ricinus plant. The castor seeds contain 40-50% oil. Between 2009 and 2013, the average annual world production of castor oil seed was approximately 1.99 million tons (Mensah et al. 2018) and represents ~ 0.15% of the total vegetable oil produced worldwide (Severino et al. 2012).

Castor plants (*Ricinus communis*) are part of the large spurge family (Euphorbiaceae), which cultivate naturally under different climatic conditions [1]. Castor oil plant initially belonging to India and Africa and then imported from India to China around 1400 years ago [1]. Castor seed contains 50% of oil, which can be easily extracted, and transformed into ...

Soybean LEC2 Regulates Subsets of Genes Involved in Controlling the Biosynthesis and Catabolism of Seed Storage Substances and Seed Development ... FAs are precursors for all lipids, whether they serve as energy storage or membrane structure. ... level behaves reciprocally with the other main storage compounds such as oil and protein (Angeles ...

Castor (*R. communis*) is a shrub of the spurge family (Euphorbiaceae) which grows well, either wild or cultivated, in tropical and sub-tropical regions of the world (Ken et al. 1990; Megueni et al. 2016). World's castor seed production stood at 1.85 million metric tonnes in 2013. The bulk of the world's castor seed production takes place in India, China and Brazil ...

Castor oil is a vegetable oil pressed from castor beans, the seeds of the plant *Ricinus communis*. [1] The seeds are 40 to 60 percent oil. [2] It is a colourless or pale yellow liquid with a distinct taste and odor. Its boiling point is 313 °C (595 °F) and its density is 0.961 g/cm³. [3] It includes a mixture of triglycerides

Main energy storage substances in castor seeds

in which about 90 percent of fatty acids are ricinoleates.

Furthermore, OBs are energy sources in oilseed crops during the germination and the establishment of seedlings (Hu et al., 2020). OBs are dynamic organelles associated with various physiological mechanisms such as hormone signaling and membrane biogenesis, which regulate the diurnal processes and development of the cells (Pyc et al., 2017). OBs are mainly ...

General view of the metabolic pathways connecting carbon partitioning to the main storage compounds in seeds and key enzymatic steps involved in seed development. Photoassimilates from source ...

Toxic Components of Castor Seeds. While castor oil has many uses, it's important to be aware of the toxic components of castor seeds. Castor seeds contain a toxic compound called ricin, which can be harmful if ingested in large quantities. It's important to keep castor seeds and the oil out of reach of children and pets, and to handle them ...

Castor oil composition is influenced by the area of production and method of extraction adopted. The chemical structure of castor oil is centered on the ricinoleic acid and three major...

Consequently, a thorough investigation and optimization of the extraction methods for mixed Castor-Jatropha seeds are highly desirable. Castor and Jatropha seeds, both non-edibles, thrive in tropical and subtropical regions, exerting minimal impact on the land dedicated to crop cultivation (Tambunan et al., 2012, Arunkumar et al., 2019, Ofori-Boateng et ...

Around 1-2 million tonnes of castor seeds are grown every year for the production of castor oil. Castor oil contains very little ricin as the toxin is insoluble in it and manufacturers ensure no residual toxin remains by heating it to denature any that may be present. However, the solid waste that is left over after the seeds are crushed can ...

Cotyledon and true leaf of castor plant have different physiological adaptation mechanisms to salt stress. ... axis growth, which is defined as storage-type cotyledon. In addition, there are also some plants with inadequate storage substances and energy in their cotyledon, however they contain many photosynthetic pigments, and for this reason ...

Among the DEPs between castor offspring and parents, 17.20% were involved in seed nutrient storage, most of which were upregulated in the offspring seeds. Starch, the main storage carbohydrate of plant seeds, may account for 50% of the dry matter in storage organs ...

Abstract. Seed maturation or seed filling is a phase of development that plays a major role in the storage reserve composition of a seed. In many plant seeds photosynthesis plays a major role ...



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