



## GENETICALLY ENGINEERED RICE. THE SOURCE OF $\beta$ -CAROTENE

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$\beta$ -carotene is a precursor of vitamin A. It is converted to vitamin A in the humans intestine by the  $\beta$ -carotene-15,15'-monooxygenase. Vitamin A is essential to support vision, as an antioxidant it protects the body from free radicals, it helps to integrate the immune system, as well as takes part in cellular differentiation and proliferation. Vitamin A deficiency is a major public health problem especially among developing countries. Nyctalopia, commonly known as „Night Blindness” is one of the major symptoms of Vitamin A deficiency (VAD). Plants such as apricots, broccoli, carrots, and sweet potatoes are rich in  $\beta$ -carotene. Some of the plants are characterized by a higher content of provitamin-A. Among vegetables rich sources of  $\beta$ -carotene are: carrots, pumpkin, spinach, lettuce, green peas, tomatoes, watercress, broccoli and parsley leaves. Amongst fruits

the highest content of  $\beta$ -carotene is in apricot, cherry, sweet cherry, plum, orange and mango.

The aim of the present study was to analyze available literature data of increasing the content of  $\beta$ -carotene in genetically engineered rice. The genetically modified cultivar contains additional genes: PSY and CRTI thanks to which rice seed endosperm contains  $\beta$ -carotene. Genetically engineered rice with  $\beta$ -carotene is an effective source of vitamin A, it contains approximately 30  $\mu$ g  $\beta$ -carotene per 1 g.

Fortunately some of the advantages of Genetically Modified Food give an opportunity to reduce VAD worldwide, by introducing the rice which has been genetically engineered to be rich in  $\beta$ -carotene. The popularity of this plant as an element of nutrition is simultaneously a source of vitamin A.