

Abstract

Vitamin A deficiency is a long-term issue influencing mainly the population of poor countries. It causes a number of health problems (eyesight quality, susceptibility to infection diseases). Vitamin A is obtained naturally from food, however in poor countries there is a lack of varied diet rich in micronutrients. Local population is dependent on a few crop types actually planted and harvested in such regions. A sustainable way to improve this situation is growing of biofortified rice, maize, sweet potato, banana, sorghum, or cassava. These crops are called “golden crops” for their specific yellow to orange color.

In the thesis, I thoroughly describe the biosynthesis of Provitamin A and the issue of its deficiency. Based on studied literature, I have compiled the currently known information about the production of golden rice and other golden crops consumed mainly in poor countries. There is a breeding method aiming at increasing the level of β -carotene in consumed parts of plants described for each particular crop type. Described methods are either conventional when the enriched plants are obtained through traditional breeding (sweet potato), or processes of genetic engineering are applied because of the insufficiency or impossibility to use conventional methods (banana, rice, cassava, sorghum). Enriched maize can be produced by a combination of both.

In final part of the thesis, I address the controversy surrounding genetic engineering and putting in doubt of its beneficial effects. I also mention some specific protest actions and offer some arguments supporting some aspects of genetic interference.

Key words

golden crops, GMO, vitamins