Lutein Production in Microorganisms

BACKGROUND

Carotenoids are found in a wide variety of organisms where they play important roles in photoprotection and light harvesting. Plant derived carotenoids also provided nutritional benefits to humans. Lutein, which is produced by hydroxylation of the carotene ring, is only available from plant sources. But bacteria or other microorganisms have not been shown to be a source for producing lutein.

INVENTION

The ultimate purpose of the invention is to produce lutein in bacteria and other microorganisms. The invention is based on the fact that when two plant enzymes CYP97A and CYP97C are expressed in microorganisms capable of producing carotenes, the microorganisms become capable of producing lutein. Also, the CYP97A and CYP97C enzymes interact within a plant cell.

APPLICATIONS

Lutein derived from this invention can be used:
- As a nutraceutical and to fortify food products.
- To treat age-related macular degeneration and other eye diseases
- As an antioxidant in cosmetics
- For lutein-enriched yeast production used in making of bread or other yeast-containing foods.
- For lutein-enriched microorganisms used in making of yogurt and cheese, and other micro-organism treated foods
- As natural food colorant.

ADVANTAGES

The findings of this invention will:
- Provide a new source of lutein derived from micro-organisms.

MARKET

- "Strategic Analysis of the Global Markets for Lutein in Human Nutrition" reveals that the lutein market to reach nearly $125 million by 2013.
- Global Carotenoids market to reach US$1.3 Billion by 2017
- Nutraceutical market is expected to grow 7% annually, from $345 billion in 2011 to $450 billion in 2015.

TEAM

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