TECHNOLOGY

One-pot Transformation Process for Making a Pure Provitamin a Carotenoid

OVERVIEW

Background

Carotenoids are naturally occurring pigments present in fruits, vegetables, plants and in photosynthetic organisms like algae, bacteria and fungi. Carotenoids act as antioxidants that can potentially act against cancer, heart disease and can boost the immune system. Over 600 kinds of carotenoids have been isolated and identified in natural products. There are four carotenoids that act as precursors of vitamin A in humans (beta-carotene, alpha-carotene, gamma-carotene and beta-cryptoxanthin). Lutein and zeaxanthin are two carotenoids that are commonly present in fruits, vegetables, and plants while beta-cryptoxanthin is a rarely found carotenoid in foods. Previous studies have shown that it is possible to extract and purify carotenoids from both natural and artificial (commercially available) sources. There have been different methods that have been employed to convert one form of carotenoid to another as well. However, simplified, efficient steps yielding highly pure desired products have remained elusive until now.

Innovative Technology

A researcher at the University of Maryland has developed a unique and efficient method of transforming lutein from both natural and artificial sources to highly pure beta-crytoxanthin. The uniqueness of this reaction is that it is a single step one pot reaction that takes place at room temperature. The advantage of this method over previously used methods is that it eliminates unnecessary steps that require the heating of the reaction mixture and delivers a highly purified product. Obtaining a highly purified product is an imperative step in the process of manufacturing a nutritional supplement since it has to be safe for human and animal consumption.

APPLICATIONS

· Nutritional, Food, Pharmaceutical and Topical applications for human and animal
· Potential medicinal use as a preventative agent against cancer, heart disease and macular degeneration.

ADVANTAGES

· Efficient process as it involves a single step one pot reaction
· Economically viable synthesis route since it involves fewer steps
· Reaction takes place at room temperature and avoids steps involving heating the reaction ingredients at high temperatures
· Conducive to scaling up and manufacturing
· Reaction results in extremely pure beta-cryptoxanthin

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

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CATEGORIES

- Chemical

EXTERNAL RESOURCES

- US Patent 9,725,411

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