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Biological Systems: Open Access

Editor Note

Editorial note on Editorial note on Clinical Use of Phytoplankton Carotenoid Pigments to Cure Cancer

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EDITORIAL

In addition to their main ecolophysiological roles, phytoplankton pigments have biological and pharmacological activities in human cells, allowing them to be considered for clinical use in the treatment of a variety of diseases. While in vitro studies in cell culture models have given much of our knowledge about their cell pharmacology and bioactivity, recent in vivo studies have validated the ability of phytoplankton carotenoid pigments to restrict inflammation and metabolic disorders, retinal diseases, degenerative diseases, tumour progression, and hepatotoxicity.

Aside from these positive observations, further research is needed to pinpoint their pharmacokinetics, pharmacological targets, and clinical efficacy in humans. Clinical studies and the creation of new therapies utilising microalgae pigments would be aided by the availability of highly purified pigments at reasonable prices. The great ability of phytoplankton carotenoid pigments to prevent and cure cancers is the subject of this short paper. The chlorophylls, carotenoids, and phycobiliproteins families of pigments have formed in both marine and freshwater microalgae. Beyond their well-known antioxidant function, which has been used to market algae-based cosmetics and nutraceuticals, it is now clear that microalgae pigments have a lot of potential as health nutrients to prevent cancer, heart disease, and other diseases.

Carotenoids were isolated and demonstrated to have high antiproliferative, cytostatic, cytotoxic, and/or pro-apoptotic activity in cancer cell cultures in a number of studies aimed at identifying antiproliferative molecules from microalgae extracts. Our research team, for example, conducted bioguided pigment isolation from Duniella tertiolecta and discovered that violaxanthin was the most antiproliferative molecule present in Dt dichloromethane extract.

After bio guided isolation from Cyano phora paradoxa ethanolic extracts, we recently confirmed that zeaxanthin and -cryptoxanthin have potent antiproliferative activity in human invasive melanoma cell. Aside from the purification of antiproliferative pigments [5,6], additional research has shown that microalgae carotenoids influence a variety of cellular and molecular processes. It was first shown that carotenoids' antioxidant activity protects against ROS-induced DNA mutations, and tissue and animal studies verified that most carotenoids effectively minimise the inflammatory processes triggered by carcinogenic agents, thus reducing the risk of cancer initiation. Adding peridinin to mice's dietary water, for example, reduces the production of carcinogen-induced skin tumours.

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Received date: 5 March, 2020; **Accepted:** 15 March, 2021; **Published:** 31 March, 2021

Citation: Thirunahari, A (2021) Editorial Note on Effect of Shapes, Binders and Densities of Faecal Matter. J Biol Syst Open Access 10: 194.