

Microalgae and bioactive compounds

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Abstract:

Microalgae are photosynthetic organisms that play a key role in aquatic ecosystems. Microalgal metabolism reacts to changes in the external environment with changes in its intracellular environment. Thus, the manipulation of the culture conditions, or the presence or absence of certain nutrients, stimulates the biosynthesis of specific compounds. Microalgae are a natural source of bioactive compounds that mostly can be obtained from their biomass or released extracellularly into medium.

The condition of microalgal cultivation is an important factor that influences the metabolism of these microorganisms, thus directing the synthesis of specific compounds. So the role of temperature, the pH of the medium, the period of cultivation, as well as salinity, light intensity and medium constituents have been noticed.

Results showed that bioactive compounds of microalgae mostly consist of pigments such as carotenoids and their derivatives (β -carotene, lycopene, astaxanthin, fucocoxanthin), phycobiliproteins (PE, PC, APC), polysaccharides (EPS), lipids such as long-chains of polyunsaturated fatty acids (PUFAs), glycerol and sterols and also vitamins. These compounds have antioxidant, antimicrobial, anti-inflammation and also anti-degenerative disease activities.

The proven ability of microalgae to produce bioactive compounds places these microorganisms in the biotechnological spotlight for application in various areas of study, especially in life science. The production of microalgal metabolites, which stimulate defense mechanisms in human body, has taken intense study of application of microalgal biomass in various foods and pharmaceutical and medical products. Therefore, more research in condition of optimum production according to their special applications is necessary.

Key words: *bioactive compounds, biotechnology, microalgae.*

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