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Opinion Article

Use of Algal Metabolites in Different Treatment

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DESCRIPTION

Algae are eukaryotic plants that belong to the kingdom Protista and have been alive for over a billion years. These photosynthetic organisms are classed as macroalgae (multicellular) or microalgae (unicellular) based on their size (unicellular). Algae include numerous proteins and dietary fibers that can act as anti-inflammatories, anti-microbes, and disease prevention agents, in addition to preserving carbon dioxide levels on Earth and mitigating climate change. The metabolic versatility of microalgae is one of the main advantages of using them to make pharmaceuticals. Photo-bioreactors can be used to grow pharmacologically important algae on a huge scale. High-value components like carotenoids and astaxanthin, which have remarkable antioxidant qualities, are found in the edible form of marine algae. Carrageenans, sulfated polysaccharides containing fucoidan, fucosterol, sodium alginate, and protein, are naturally produced by marine microalgae (seaweed). Furthermore, the algae *Spirulina platensis* produces *Spirulina,* a superfood. In addition, some metabolites extracted from cyanobacteria, such as cyanovirin, scytovirin, and microvirin, are effective against a variety of viral, bacterial, and fungal infections. Eicosapentaenoic and docosahexaenoic acids, the two most essential omega-3 fatty acids, are found in the majority of microalgae. These chemicals lower the risk of heart disease considerably. Griffithsin (GRFT), a protein derived from the macroalgae *Griffithsia sp*, is anti-HIV-1. Many marine algae species, as well as their extracts and metabolites, have been studied for their antiviral properties and have been found to be effective against a variety of viruses. *Spirulina* is a food supplement that contains a variety of vital fatty acids, phenolic acids, vitamin B12, and sulfated polysaccharides. Because it binds to the 36 spikes of the S1 domain and stops them from engaging with their receptor, it exhibits antiviral activity against pseudo-type coronaviruses. As a result, Porphyridium sulfated polysaccharides from red algae species are being promoted as prospective antiviral treatments that may be used to coat sanitary goods to prevent COVID-19. Furthermore, Natural Astaxanthin (nASX) derived from microalgal species (*Haematococcus pluvialis*) was used as an adjuvant in combination with primary COVID-19 medicines to improve patient immunity and reduce recovery time. Microalgae are a fascinating but understudied natural source of nutrients for a balanced diet. Several microalgae species have been found as being high in carbohydrates, proteins, lipids, and other nutritionally important components.

CONCLUSION

Algal metabolites have remarkable potential for the development of novel antiviral therapies with cost efficiency, as algae are easily cultivable under controlled settings in any area of the world, regardless of geographical distribution. Algal metabolites have demonstrated multistep antiviral capability, including virus binding, entrance, and reproduction in host cells, cell-to-cell transmission, and cytopathic effects without causing significant harm to the host cells. In future algae can be used for the treating different disease. Algal metabolites may open up new pathways for the development of novel therapeutic methods for COVID-19 and other viral diseases that plague the world.

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