

## Pharmaceutical Interests

Microalgae are unicellular, microscopic and photosynthetic microorganisms that grow in fresh or salt water. Although most microalgae are eukaryotes, some still exist as prokaryotes. There are about 800,000 species of microalgae that exist in different forms. Most microalgae live in wild and unpleasant environmental conditions and can divide rapidly due to their unicellular and simple multicellular structure. As a result of their unique metabolism, microalgae react to changes in their external environment with changes in their intracellular environment. During the growth stage of most microalgae, different metabolic processes in the cells lead to the biosynthesis of various compounds and molecules.

Microalgae are a reservoir of primary and secondary metabolites which are released during different growth stages in algal cells. Because of the presence of several primary and secondary metabolites in algal cells, microalgal biotechnology has received much interest, with its application in the energy, food, pharmaceutical and cosmetic industries. The use of dried algal biomass and algal-derived biologically active compounds as pharmaceuticals has received much attention recently. Polysaccharides from microalgae are potent immunomodulatory, anti-inflammatory, hypocholesterolemic, hypolipidemic and hypoglycemic agents. These compounds have been discovered to be potent inhibitors of glutaminyl cyclase,  $\alpha$ -glucosidase and telomerase activities. Sulfolipids also exhibit several biological activities, such as anti-inflammatory, anti-neoplastic, antiviral, immunosuppressive and anti-proliferative activities. Biologically active compounds derived from different species of microalgae have been shown to possess several pharmacological properties such as anticoagulant, anti-inflammatory, anticancer, antimicrobial, antioxidant and antiviral activities. Different classes of compounds such as carotenoids, phenolic compounds, polyunsaturated fatty acids, polysaccharides, sterols, phycobiliproteins, vitamins and alkaloids have been identified in various microalgal strains.