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Editorial

Marine Algae as Bioproducts for the Prospection of New Drugs

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Marine algae represent the basis of the food chain in the oceans and sustain more than two-thirds of the world's biomass and are still responsible for approximately half of global photosynthetic activity. In addition to its ecological importance, algae are considered to be excellent sources of proteins, carbohydrates, vitamins, minerals, low lipids and high nutritional value, and also produce other metabolites with economic potential, such as lectins, polyphenols, sulfated polysaccharides, terpenes, fatty acids, proteins and several other bioactives. The seaweed derivatives have emerged in recent years as a rich and important source of natural bioactive compounds and for this reason the production and applications of these bioproducts as therapeutic agents in the pharmacological industry have been the subject of intense research. Thus, we will discuss some papers that report the potential of these bioproducts extracted from seaweed.

The required number of new antimicrobial agents is higher than ever due to the rapid presence of new infections, emergence of multidrug resistance in common pathogens, and the potential for use of multidrug-resistant agents in bioweapons [1]. Thus, Shafay., *et al.* [2] isolated compounds with antimicrobial activity such as phenols, terpenes, acetogenins, indoles, fatty acids and volatile halogenated hydrocarbons from red algae *Ceramiumrubrum* (Rhodophyta), *Sargassum vulgare*, *Sargassum fusiforme* and *Padinapavonia* (Phaeophyta). The changes in ultrastructure of tested dangerous multidrug resistant (MDR) bacterial strains were investigated by transmission electron microscope which shows shrinking of protoplasm cytoplasmic vacuolation deformation in cell structure and distortion of outer cell boundary.

Inflammatory diseases have become one of the leading causes of health issue throughout the world, having a considerable influence on healthcare costs. Anti-inflammatory properties of algae bioactives have become a major concern in medicinal research as they could provide desirable protective effects over the pathogenesis of inflammatory diseases which could replace the synthetic drugs in use (Shanura., *et al*. 2016). The sulfated polysaccharidic fraction from the green seaweed *Ulvalactuca* showed an antinociceptive effect by peripheral mechanism and an anti-inflammatory effect, by the inhibition of the osmotic edema, characterized especially to bradykinin action, showing that structural components of the polysaccharidic fraction evaluated acts in the control of this pathway. Additionally, the sulfated polysaccharidic fraction is devoid of significant toxicity, making it safe for further studies on pre-clinical level [3]. Therefore, the discovery of novel anti-inflammatory drugs from marine algae could bring a new insight to the field of biomedical research and industry.

More recently, Coura., *et al*. [4] evaluated the antinociceptive effects of a polysulfated fraction from the red seaweed *Gracilaria cornea* (Gc-FI) on the formalin-induced temporomandibular joint (TMJ) hypernociception in rats and investigated the involvement of different mechanisms. The results showed that pretreatment with Gc-FI significantly reduced formalin-induced nociceptive behavior mediated by μ/δ/κ-opioid receptors and by activation nitric oxide/cyclic GMP/protein kinase G/ATP-sensitive potassium channel pathway, besides of heme oxygenase-1.This is a very important work in view of the fact that temporomandibular disorder is a common clinical condition involving pain in the TMJ region.

The investigation of marine macroalgal chemical compounds has proven to be a promising area of pharmaceutical study, resulting in new drugs. Therefore, the discovery of novel molecules with a high therapeutic potential from marine macroalgae is very welcome.

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