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Reviews

Toxicological effects of marine seaweeds: a cautious insight for human consumption

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Abstract

Marine environment is a rich and diverse source for many biologically active substances including functional foods and nutraceuticals. It is well exploited for useful compounds, natural products and aquaculture industry; and seaweeds is one of the major contributors in terms of both food security and healthy nutrition. They are well-known due to their enormous benefits and is consumed globally in many countries. However, there is lack of attention toward their toxicity reports which might be due toxic chemical compounds from seaweed, epiphytic bacteria or harmful algal bloom and absorbed heavy metals from seawater. The excess of these components might

...and excessive heavy metals from seaweeds. The excess of these components might lead to harmful interactions with drugs and hormone levels in the human body. Due to their global consumption and to meet increasing demands, it is necessary to address their hazardous and toxic aspects. In this review, we have done extensive literature for healthy seaweeds, their nutritional composition while summarizing the toxic effects of selected seaweeds from red, brown and green group which includes- *Gracilaria*, *Acanthophora*, *Caulerpa*, *Cladosiphon*, and *Laminaria* sp. *Spirulina*, a microalgae (cyanobacteria) biomass is also included in toxicity discussion as it an important food supplement and many times shows adverse reactions and drug interactions. The identified compounds from seaweeds were concluded to be toxic to humans, though they exhibited certain beneficial effects too. They have an easy access in food chain and thus invade the higher trophic level organisms. This review will create an awareness among scientific and nonscientific community, as well as government organization to regulate edible seaweed consumption and keep them under surveillance for their beneficial and safe consumption.

Q KEYWORDS: *Acanthophora* *Caulerpa* sp. *Cladosiphon* *Gracilaria* sp. *Laminaria japonica*

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Additional information

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