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Edible food packaging from seaweed-based materials

Shruti Raj

Plastic, which is a major food packaging material, is typically made from resources that are non-renewable. It also produces toxic fumes which leads to several economic losses. Edible food packaging with seaweed-based material would be a great replacement for plastic packaging. Edible packaging is made of natural, biodegradable, plant-based materials and can be eaten on the go without a need for waste collection, processing, recycling or disposal. Further, seaweed is a versatile marine organism that produces different kinds of polysaccharides, such as agar, carrageenan and alginate. These polysaccharides are broadly used for the development of various biopolymers. Seaweed polysaccharides have antioxidant capabilities and the ability to form films. Moreover, they are biodegradable and non-toxic in nature. Seaweed is currently used in active packaging, edible films, edible coatings and sachets. Biopolymers derived from seaweed polysaccharides acquire promising features as they are renewable, biocompatible and eco-friendly. In addition, seaweed contains high fibre, protein, vitamin and mineral content. As most of the oxygen on earth comes from the ocean, planting more seaweed will improve air quality as seaweed absorbs carbon dioxide and releases oxygen. Seaweeds can be combined with other polysaccharides, nanoparticles, essential oils and plant extracts to improve their mechanical, thermal, antioxidant and antimicrobial properties. Seaweed-based materials can also enhance shelf life and maintain the quality of different food products. Seaweed-based packaging as a replacement for plastic packaging will definitely ease the waste management process.

Keywords: Seaweeds, Biopolymers, Edible packaging, Biodegradable, Polysaccharide, Edible coatings

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