ScienceDirect

Materials Today: Proceedings

Volume 37, Part 2, 2021, Pages 1634-1639

Bioplastics as better alternative to petro plastic

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https://doi.org/10.1016/j.matpr.2020.07.176

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Abstract

Marine algal seaweeds are the underutilized bioresource i.e. food source, raw materials from industries, therapeutic application also. Seaweeds are the natural polysaccharides used in pharmaceutical preparation as tablets, as stabilizers, cosmetics and bioplastics packing industries. Raw materials such as sago, corn and food crops are used to produce green plastics these have low mechanical properties. Scientists have published alternative plastics by using red algae to produce biofuels. Eucheuma cottonii is the red algal crops use to produce plastics by filtration. Art carpus altilis and Calotropis gigantea are the red algae used to replace glycerol. Plastics are non-biodegradable and are toxin for human, animal and environment on the other hand bioplastics are degradable similar applications with plastics. Seaweeds are more efficient to produce bioplastics rather than plants, animals and other sources due to its high biomass from seaweeds are still on research. It less brittle, durable and is more resistant to microwave.

Introduction

Plastics are nothing but carbon-based polymers. Petroleum is most commonly made from it. The discovery of plastic made life much more at ease as it makes tons of useful materials. But the durability of plastics is such that it does not degrade easily and some even do not degrade at all. Our environment has become a much less attractive place because of the pollution causing discarded plastics. It is an extremely difficult process to get rid of plastics. Toxic materials are released like dioxins which is one

of the major causes of Global Warming. The process of plastics recycling is also difficult owing to the variety of plastics which has to undergo different processes for recycling [1], [2], [3], [4].

The plastics derived from renewable biological sources such as plants, bacterial and algal sources which can get degraded by microorganisms present in the soil such as fungi and bacteria without releasing any pollutants are termed as Bioplastics. Moreover, the environmental health is maintained by the using renewable sources in their process of manufacturing. Green plastics have many advantages over Petro plastics such as non-toxic chemical, easier to recycle, reduction of fossil fuels, require less amount of energy to produce, renewable and eco-friendly. Bioplastics were initially used during the early 19th century only for wrapping candies and so their use is not new. They are expensive and originates from biological sources and thus gain significant importance [5], [6], [7], [8].

Section snippets

Statistical data of nutraceuticals over worldwide

It was estimated that there is a average of 327,000 tonnes of green plastics and an average of 12.3 million tonnes of worldwide consumption. It was calculated that the industry of green plastics could be worth of $20 billion by 2020 [9], [10] Fig. 1.…

Algae as a sources of pharmaceutical

Plant, bacterial and algal are the various sources of bioplastics.…

Preparation of *Cordium fragile*

Polysaccharide is the component of seaweeds responsible for the production of bioplastics. Carrageenan, agar, Floridian starch and alginate are some types of seaweed polysaccharide. The seaweed is gathered systematically, quickly dried and then baked its quality and freshness is maintained. First the dissolved polysaccharide mixture undergoes centrifugation eliminates the dense bigger cellulose particles, filtered to remove the left out smaller particles and lastly, the solution is concentrated …

Conclusion:

The technology for the production of seaweeds-based bioplastics has undergone various experimentation. To conduct the feasibility and sustainability studies in seaweed-based bioplastics the use of biotechnological and genetic engineering techniques plays a vital role. [5], [8], [4]. Glycerol has a physical and mechanical properties dwelling in the red algae bioplastics. The glycerol has degree of opacity and use of it increased the air in their mixtures leading to a decrease of thickness and…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Acknowledgment

The Authors are thankful to the Assistant professor Mrs. R. Thiruchelvi and management of Vels Institute of Science, Technology and Advanced Studies for providing a platform to write this review work.…

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> ...However, many of these bioplastics are mixed or combined with synthetic components to improve their functional characteristics and to expand the range of uses, which does not benefit their environmental character (Luzi, Torre, Kenny & Puglia, 2019). A promising alternative to these materials is protein-based bioplastics (Thiruchelvi, Das, & Sikdar, 2020). These bioplastics are made up of proteins mainly from agri-food waste, which makes them relatively cheap and ecological....

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