Current Developments in Biodegradable Polymers Based On Polysaccharides for the Smart Food Packaging Sector

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Abstract

Artiýcial packaging materials, such as plastic, can reason substantial environmental problems. Thus, the use of polysaccharide-based biodegradable polymers (cellulose, starch, and alginate) has the viable in the subject of environmentally sustainable packaging. Moreover, the degradation of biodegradable polymers brought on via cloth degradation have a big e ect on polymer fabric characteristics. To keep away from degradation for the duration of storage, it is necessary to consider and be aware of the structure, characteristics, and conduct of modern-day bio-based substances for plausible meals packaging applications. Hence, this assessment targeted on the number sorts of polysaccharide-based biodegradable polymers (cellulose, starch, and alginate), their properties, and their industrial manageable for meals packaging applications. In addition, we overviewed the current improvement of polysaccharide-based biodegradable polymer (cellulose, starch, and alginate) packaging for meals products. The assessment concluded that the membrane and chromatographic are extensively used in manufacturing of cellulose, starch, and alginate-based biodegradable polymers. Also, nanotechnology-based meals packaging is broadly used to enhance the homes of cellulose, starch, and alginate biodegradable polymers and the incorporation of lively retailers to beautify the shelf lifestyles of meals products. Overall, the evaluate highlighted the achievable of cellulose, starch, and alginate biodegradable polymers in the meals packaging industry and the want for workable lookup and improvement to enhance their homes and business viability.

Keywords: Biodegradable polymers; Polysaccharides; Smart food packaging; Sustainable packaging; Environmental-friendly materials

Introduction

In recent years, the quest for sustainable solutions in packaging materials has intensi ed due to growing environmental concerns and increased awareness of the detrimental impacts of traditional plastics. Among the emerging alternatives, biodegradable polymers derived from polysaccharides have garnered signi cant attention for their potential applications in the food packaging sector [1]. Polysaccharides, abundant in nature and renewable, o er a promising avenue for developing eco-friendly packaging materials that address both environmental and functional requirements. is paper provides an overview of the current developments in biodegradable polymers based on polysaccharides for smart food packaging, exploring their properties, fabrication methods, and potential applications [2].

Discussion

e utilization of biodegradable polymers derived from polysaccharides in the smart food packaging sector presents numerous advantages and challenges. One of the key advantages is their eco-friendly nature, as polysaccharides are renewable resources that can be sourced from various biomass feedstocks such as starch, cellulose, chitosan, and alginate [3]. ese materials o er biodegradability and compostability, reducing the environmental footprint associated with conventional

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and realize the full potential of polysaccharide-based biodegradable polymers for smart food packaging applications. With continued collaboration and investment, polysaccharide-based polymers have the potential to revolutionize the food packaging industry, enabling the transition towards a more sustainable and environmentally-conscious future.

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Conflict of Interest

None

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