

Recent Developments and Applications of Microbial Levan, A Versatile Polysaccharide-Based Biopolymer

Autorzy

Marta Domżał-Kędzia

Monika Ostrowska

Agnieszka Lewińska

Marcin Łukaszewicz

Rok wydania

2023

Czasopismo

Molecules

Numer woluminu

28

Strony

5407/1-5407/23

DOI

10.3390/molecules28145407

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Polysaccharides are essential components with diverse functions in living organisms and find widespread applications in various industries. They serve as food additives, stabilizers, thickeners, and fat substitutes in the food industry, while also contributing to dietary fiber for improved digestion and gut health. Plant-based polysaccharides are utilized in paper, textiles, wound dressings, biodegradable packaging, and tissue regeneration. Polysaccharides play a crucial role in medicine, pharmacy, and cosmetology, as well as in the production of biofuels and biomaterials. Among microbial biopolymers, microbial levan, a fructose polysaccharide, holds significant promise due to its high productivity and chemical diversity. Levan exhibits a wide range of properties, including film-forming ability, biodegradability, non-toxicity, self-aggregation, encapsulation, controlled release capacity, water retention, immunomodulatory and prebiotic activity, antimicrobial and anticancer activity, as well as high biocompatibility. These exceptional properties position levan as an attractive candidate for nature-based materials in food production, modern cosmetology, medicine, and pharmacy. Advancing the understanding of microbial polymers and reducing production costs is crucial to the future development of these fields. By further exploring the potential of microbial biopolymers, particularly levan, we can unlock new opportunities for sustainable materials and innovative applications that benefit various industries and contribute to advancements in healthcare, environmental conservation, and biotechnology.

Słowa kluczowe

levan, biopolymers, polysaccharide, *Bacillus subtilis*, safety, food industries, pharmaceutical industries, cosmetics

Licencja otwartego dostępu

CC-BY

Licencja na prawach której można swobodnie kopiować, rozprowadzać, zmieniać i remiksować objęty prawem autorskim utwór (Utwór-przedmiot prawa autorskiego) pod warunkiem podania imienia i nazwiska autora utworu pierwotnego oraz źródła pochodzenia utworu.

Pełny tekst licencji:

<https://creativecommons.org/licenses/by/3.0/pl/legalcode>

Adres publiczny

<http://dx.doi.org/10.3390/molecules28145407>

Strona internetowa wydawcy

<http://www.mdpi.com/journal/metals>