

2023年5月前期のアイエ全^{*}クラス (1)

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Background

Due to biomaterials' biodegradable, biocompatible, sustainable, and renewable nature, there is growing interest in developing biopolymer-based food packaging films based on green ingredients and strategies. To improve the performance of biopolymer-based food packaging materials, either by modifying the biopolymer molecules or combining them with various additives, including nanomaterials, crosslinkers, bioactive compounds, and other polymers. Among them, green crosslinking technology is considered an effective method to improve the performance of degradable food packaging films. Tannic acid is widely used as a natural green crosslinker in different biopolymer-based films.

Scope and approach

In this review, after an overview of tannic acid chemistry, different types of biopolymer-based food packaging materials crosslinked by tannic acid have been discussed in detail. In addition, this work summarizes the application of tannic acid crosslinked biopolymer-based food packaging films/coatings for food preservation in recent years.

Key findings and conclusions

The crosslink of tannic acid could improve the performance of biopolymer-based films comprehensively. The effect of tannic acid on the properties of different films is mainly related to its addition concentration and reaction state, where the crosslinking of tannic acid with polymer molecules increases the cohesion of the polymer network. The crosslinking between tannic acid and polymers occurs, including physical and chemical covalent crosslinking. Importantly, biopolymer-based food packaging films/coatings crosslinked by tannic acid have shown surprising effects in preserving fresh foods.

Tannic acid
タンニン酸

covalent
共有結合

Graphical abstract

「food packaging

films

食物の

鮮度と

保存の
非常に効果的

bio polymer
(生体高分子)

生物の細胞の

作り出す

天然の高分子