Starch
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Research Article

The Effect of Curcumin and Cornstarch Biopolymers on the Shelf Life of Fresh Cheese: Physicomechanical and Antimicrobial Properties

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Abstract

Natural polymers are used more frequently in packaging as alternatives to synthetic plastics. Cornstarch is one of the cheapest carbohydrate biopolymers that form films with suitable properties and appearance but considerably larger hydrophilicity and low mechanical characteristics compared to synthetic films. Incorporating curcumin into cornstarch films improves mechanical and antimicrobial properties and curcumin release into aqueous solutions of the films. The results show that the introduction of curcumin decreases the water solubility of the edible films from 3.58% to 1.49% and the moisture absorption from 2.87% to 1.94% ($p < 0.05$) and increases the length of films from 40% to 80% without changing their thickness. Examination of color properties shows that the increased curcumin concentration leads to a decrease in transparency and an increase in the redness and yellowness indices. These properties change from 72.2, 3.5, and 5.1 to 39.2, 21, and 13.7, respectively. The number of mold and yeast colonies in the cheese sample decreases during the storage period of 5 days. Generally, the findings indicate that the bioactive film of corn starch and curcumin (0.5%) can be used as a suitable coating for food products.

Conflict of Interest

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Open Research

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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