

EDIBLE STARCH-BASED COATING REINFORCED WITH CELLULOSE NANOCRYSTALS TO IMPROVE SHELF-LIFE OF FRESH STRAWBERRIES

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ABSTRACT

Strawberries (*Fragaria × ananassa* Duch.) are very popular fruits due to their attractive color and taste, nutritional values and the wide possibility of industrial processing. However, they have a short shelf life. To circumvent this problem the objective of this study was to evaluate the starch-based filmogenic solutions (ST), as coatings on strawberries, with different cellulose nanocrystals (CNC) concentrations (1, 2, 5, 10 and 15% dry weight) and plasticized with glycerol. Coated strawberries were stored at 7 °C for 12 days and evaluated for weight loss, firmness, reducing sugars, fungi and yeast, and aerobic mesophilic bacteria. The results showed that the ST coating presented positive results in relation to weight loss, but the CNC based reinforcement was not able to form

a coating on the fruits with better water vapor barrier property. The addition of CNCs did not cause changes in the physical and chemical properties of strawberries. The fruits presented initial firmness of 1.48 N and at the end of the experimental period, 1.22 N. Regarding sugars, there was a slight increase in fructose during the storage period (2.03 to 2.10 g 100 g⁻¹, on the 12th day). However, glucose remained constant until 3rd and showed a slight decrease at the end of the storage period (1.79 to 1.67 g 100 g⁻¹, on the 12nd day). Sucrose was detected only on day 0 (0.35 g 100 g⁻¹), while during storage this sugar was not detected. The CNCs addition in coatings reduced the aerobic mesophilic bacterial counts on the last day of evaluation, while maintained strawberry quality. In this way CNC can be recommended used in edible coating formulations.

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