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A starch-based edible coating containing anthocyanin obtained from sweet potato waste: a circular economy approach for increasing shelf time

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There is a need for sustainable solutions to increase shelf time and ensure food safety. The use of edible protective coatings in the food industry is a simple and innovative alternative, even more, when the coating is combined with active agents that confer additional functional attributes. Natural polymers such as polysaccharides are very interesting given their edibility, biodegradability, and easy access, among other aspects. Starch is one of the most widely used polysaccharides mainly due to its low cost and simple processing technologies.

In this work, sweet potato wastes were used to extract starch (SPS) and anthocyanin. The materials were combined to develop an active edible film, by gelation process.

The edible coating was characterized in terms of surface morphology (SEM), chemical composition (FTIR) and wettability. For the protective effect, different fruits (bananas, apples, passion fruit, tomato and guava) were coated with 1 or 2 layers of the coating with or without the anthocyanin incorporated.

The results showed, in general, that the coated samples showed better results regarding texture, colour, odour and delayed maturation when compared to the control. This is indicative of the potential for increased shelf-time of fruits without significant alterations to their intrinsic properties. Moreover, the extraction process, based on food waste recovery and circularity combined with the protective effect, shows the importance of this work and its alignment with several sustainable development goals.

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