RCMC - Natural Edible Coating Based on Carnauba Wax and Mandacaru: A New Alternative to Fruit Conservation

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Waste in the food production chain directly impacts the economy and food shortage, creating the need for alternatives to reduce these losses. This project aims to develop a natural, healthy, and biodegradable product RCMC using two native products from northeastern Brazil, the mandacaru (Cereus jamacaru) and carnauba wax (Copernicia prunifera), to coat tomatoes (Solanum lycopersicum L), one of the fruits with the highest losses in the production chain. The development of RCMC (the coating) involved mixing the products with distilled water, settling the solution, and applying it to the fruits through immersion or spreading. Five cycles of tests were conducted, the first four in triplicate and the last one on a larger scale, using 10 fruits for each tested group (with and without coating). The fruits with RCMC were compared in terms of shelf life with paraffin and Aloe vera gel. Sensory evaluation tests were carried out with school students, who judged fruits with RCMC and without coating, and stated that they did not perceive a difference between the tested methods. The durability of the fruits with RCMC was 21 days, while those with paraffin remained on the shelf for 6 days, and those coated with Aloe vera gel lasted 9 days. Three different formulas of RCMC were tested. The best concentration proved to be 2,400g of mandacaru, 800g of carnauba wax, and 1,500ml of distilled water, resulting in 1 liter of RCMC, which can coat around 444kg of tomatoes at a price of USD 17.76 per liter of the coating. The fruits with RCMC lost 24.51% of their mass in 21 days, whereas those without coating lost 17.55% in 6 days. RCMC has proven to be a viable alternative in tomato conservation and shows promising results to be tested in other climacteric fruits in the future.

Awards Won:

Second Award of $2,000