Anthocyanin-Based Polymeric Matrices That Can Detect Shrimp's Freshness

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In 2021, 400 million megatons of shrimp were produced. The average American consumes 4 lbs. of shrimp annually. However, despite the large consumption, there are no available methods to test the freshness of the shrimp available to consumers. This research aimed to engineer a polymeric matrix that can detect shrimps' freshness using anthocyanin collected from waste red cabbage and black rice soaked in water. The polymeric matrices were created using 10mL of deionized water, 1g of agar, and 16 mL of anthocyanin. To test the color change and sensitivity, researchers prepared a pH calibration of 4.0, 6.86, 9.18 and 12.0. Matrices were submerged in the prepared solution and coloration changes were measured using a colorimeter. Delta E values were recorded for reference. The matrices were then tested on fresh and contaminated shrimp. Delta E values were measured using a colorimeter. Data were analyzed using Microsoft Excel. The results showed that RCE showed 100% accuracy on detecting the freshness of the shrimp while BRE had an 80% accuracy. However, visually, RCE showed more consistent coloration as compared to BRE matrices. This is supported by the measure delta E values. In conclusion, the engineered polymeric matrices from red cabbage showed higher potential as a biomaterial on detecting shrimp's freshness. The polymeric matrices made from RCE is effective, ecofriendly, and economically cheap.

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