"Sotong"-Nidin: The Detection of Squid Freshness Using Red Cabbage Extract (RCE)

Lee, Rui Xuan (School: Nanyang Junior College)

Outer leaves of red cabbages are often discarded as they are perceived as contaminated products during shipment, this process resulted in unnecessary food wastage. Gearing towards a more sustainable lifestyle, reducing food wastage is crucial. This project upcycles these discarded red cabbage leaves to obtain red cabbage extract (RCE). Cyanidin in the extract was then complexed and immobilised within the readily accessible and edible agar-agar matrix, hence forming a food-grade, flexible composite. Tapping on the pH sensitivity of cyanidin, the composite was used to detect agmatine and ammonia released by squid samples as they stale. The change in pH resulted in a visible change from the original violet shade to a shade of green. Thus, the RCE detector serves as a viable, economical alternative to the current squid spoilage detection process, which largely involves expensive and exclusive sensory methods involving specially certified personnel. The ease of fabrication highlights the potential for large scale production at a low cost. It allows the detector to become a readily available source of protection against foodborne illnesses, which is especially critical in the case of seafood, whose freshness is difficult to detect. Hence to encourage greater uptake of the detector, a prototype - the "Sotong"-nidin Freshness Sticker was assembled. Real-time application test showed that the RCE freshness sticker successfully detected staled squid within 5 mins of application. The ease of application and detection efficiency makes it especially useful in setting such as the widely popular hotpot restaurants, where raw squid is served for self-cooking.

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