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Effect of Ammonia and Acid Concentrations on the Response of Fish Spoilage Indicator Solution Based on Coordination Compound of Transition Metal

Abstract

Fish products provide a vital source of essential protein and contain many minerals and vitamins in human nutrition. Unfortunately these products are extremely perishable and can be spoiled rapidly at an unsuitable storage. Diagnostic packaging plays a key role for real time monitoring quality and safety of products, by detecting volatile compounds which existed within headspace inside the package. Coordination compound of transition metal is an interesting alternative as fish spoilage indicator, having color change due to an increasing of pH caused by releasing a variety of basic volatile nitrogen compounds from fish spoilage. When iron (II) complex reacts with basic compounds, the solution is some precipitated in nanoscale that makes it noticeably different from pH-dye and clear to observe. The objective of this work is to investigate the effect of ammonia and acid concentrations on the response of fish spoilage indicator solution based on coordination compound of transition metal. The sensitivity of indicator solution and physical properties were evaluated by UV-Vis spectroscopy, spectrodensitometer, pH measurement and dynamic light scattering. In order to validate an application of this system as fish spoilage detection, the tests will be conducted with fish fillets and the expected results will be reported.

Keywords: Coordination compound, Diagnostic packaging, Fish spoilage indicator, Nanoscale precipitation, Total volatile basic nitrogen, Transition metal

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