

# Food & Beverage Packaging

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## Development of a colorimetric pH sensing film using an agar/potato starch with anthocyanins extracted from purple sweet potato

Inyoung Choi, Soo Hyun Sung and Jaejoon Han  
Korea University, Republic of Korea

Intelligent packaging and active packaging are newly developed concepts in modern food packaging system. Colorimetric pH indicator can be used as a part of the intelligent food packaging system to detect quality changes in food. In this study, potato starch and agar, which are natural and good film forming agents, were used for immobilizing natural dyes extracted from purple sweet potato, *Ipomoea batatas* to prepare a colorimetric pH indicator film. This anthocyanin extract was mixed in potato starch and agar solution as a natural pH dye. The film-forming solution was casted to make a dried indicator film. The color of pH indicator film changed from red to green after exposure to different pH solutions in the range of pH 2.0-10.0, since anthocyanin extract changed its color from red to green according to the pH variations. The UV-VIS spectra of the anthocyanin solution showed the color variation according to the different range of buffer solutions. Spectroscopy of Fourier Transform Infrared spectroscopy (FT-IR) and UV-visible region showed the compatibility between the polymers and natural dyes. The color variation of the pH indicator film was measured by colorimeter after activation in different pH buffers. Application test was conducted to validate the pH indicator film as a meat spoilage sensor. As a result, the color of pH indicator changed from red to green due to the pH increase under improper storage conditions. The result implied that the developed indicator film can be applied to intelligent food packaging system as a food spoilage indicator.

### Biography

Inyoung Choi received her Bachelor's degree in the Department of Food and Nutrition from Korea University. Currently, she is pursuing her Master's degree in the Department of Food Bioscience and Technology from Korea University. Her recent research focuses on the development of smart packaging materials with a reliable indicator technology.

[haunlzy@naver.com](mailto:haunlzy@naver.com)

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