"Development of a Formalin Identification Method in Tofu Using Water Hyacinth Flower Extract (Eichhornia crassipes)"

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ABSTRACT

Background: *Water hyacinth (Eichhornia crassipes) is an aquatic plant that grows very quickly and has good adaptability, so it often interferes with water flow and fishing activities. The flowers contain bioactive compounds such as flavonoids, alkaloids, terpenoids, and anthocyanins that function as antioxidants and natural dyes. Anthocyanins are sensitive to changes in pH or interactions with proteins, so they can be used as an indicator to detect the presence of formalin in high-protein foods such as tofu. Formalin is a dangerous chemical compound that is still often misused as a preservative in food products such as tofu. Therefore, it is necessary to conduct research on the formalin content in tofu.* ***Objective:*** *The purpose of this study is to develop a method of formalin identification in tofu by utilizing water hyacinth flower extract (Eichhornia crassipes) as a natural anthocyanin-based indicator.* ***Research Method:*** *This study Extracts were obtained by maceration method with ethanol solvents at concentration variations of 66%, 76%, 86%, and 96%. The qualitative test was performed by comparing the discoloration in tofu samples that had been soaked in formalin with negative controls (without formalin). And method validation was also carried out with two parameters, namely the selectivity test and the detection limit test.* ***Study Results:*** *The results showed that the extract with a concentration of 96% provided the sharpest color change, from brownish yellow to pink, which showed the strongest response to the presence of formalin. The results on the variation in pH concentration did not show any similarity in color, so it can be concluded that this water hyacinth flower extract is selective to formalin. Detection limit tests show that this method is sensitive to detecting formalin at concentrations as low as 1%.* ***Conclusion:*** *The overall results suggest that hyacinth flower extract can be used as an environmentally friendly, inexpensive, and efficient natural indicator alternative in the qualitative detection of formalin in food products such as tofu.*

Keywords*: water hyacinth, anthocyanins, natural indicators, maceration, formalin, tofu.*