Utilization of butterfly pea flower as shelf-life colour indicator for Keropok lekor smart packaging

ABSTRACT

Studying the feasibility of using Clitoria ternatea or butterfly pea extract (BPE) as a colorimetric indicator to determine the shelf life of Keropok Lekor would aid in monitoring storage conditions, emphasizing its potential contribution to the smart packaging industry. The objective of this research is to develop pH-sensitive packaging using gelatine film infused with butterfly pea extract (BPE) along with ultrasonic-assisted extraction methods. The investigation involves quantifying the physicochemical attributes of the extracted butterfly pea and ascertaining the colour alterations during the storage of Keropok Lekor over a duration of six days. The determination of total anthocyanin content in BPE, conducted through a pH differential assay, yielded a value of 1.08 mg/g. Texture analysis revealed that the film with 10% BPE exhibited elevated tensile strength (0.11±0.01) and toughness (0.03±0.01). Total phenolic compound analysis indicated that the film containing 30% BPE possessed the highest value at 0.16±0.02. Notably, the film with 30% BPE demonstrated the highest colour change in Keropok Lekor storage from dark blue (-22.5±80.95) to dark green (6.34±1.85) over the course of six days. The film incorporated with 30% BPE stands as a viable colour indicator, demonstrating the potential for monitoring the freshness and quality of Keropok Lekor.