

## ENCAPSULATION OF PHENOLIC COMPOUNDS FROM *STROBILANTHES CUSIA* LEAVES AND CHARACTERIZATION

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### Abstract

*Strobilanthes cusia* (Hom) is commonly used as a traditional medicine with widespread health benefits. The present investigation aimed to determine the effectiveness of phenolics extracted from Hom leaves using the ultrasonic assisted extraction (UAE) method. The lyophilized Hom extract (HE) was analyzed for total phenolic contents and examined for antioxidants. The HE was encapsulated with sodium alginate as the single wall material and with sodium alginate-gum arabic as the combination wall material to enhance the shelf life and stability of the phenolics. Additionally, hydrogel patches incorporating the encapsulated HE were developed to study the antipyretic property. The effects of type and concentration of encapsulating agents on encapsulation efficiency and cooling performance of the hydrogel patches were evaluated. The encapsulation efficiency was analyzed and characterized the capsules using Fourier-transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM) analyses corroborated the effectiveness of the encapsulation process. Results indicated that HE contained total phenolics of  $97.38 \pm 0.19$  mgGAE/g. Moreover, HE had an  $IC_{50}$  value against the DPPH scavenging assay of  $0.182 \pm 0.53$   $\mu$ g/ml. The highest encapsulation efficiency (87.95%) was achieved using combination wall of 1% sodium alginate and gum arabic. Morphological analysis using SEM revealed the surface particle aggregation of the hydrogel patches. Furthermore, FTIR analysis confirmed the interaction between HE and encapsulating agents, indicating successful microencapsulation. These findings suggest that encapsulation is a promising strategy to enhance the stability and efficacy of HM for pharmaceutical applications.

**Keyword:** *Strobilanthes cusia* extract, Encapsulation, Wall materials, Hydrogel patches