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SUBMISSION FOR EVALUATION FINAL YEAR PROJECT 2 - RESEARCH PROJECT

Extraction of Ethyl
p-methoxycinnamate from *Kaempferia galanga* and Development of Carboxymethyl
Cellulose-based Hydrogel

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**EXTRACTION OF ETHYL
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AND DEVELOPMENT OF CARBOXYMETHYL
CELLULOSE-BASED HYDROGEL**

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JULY 2025

ABSTRACT

EXTRACTION OF ETHYL *P*-METHOXYCINNAMATE FROM *Kaempferia galanga* AND DEVELOPMENT OF CARBOXYMETHYL CELLULOSE-BASED HYDROGEL

Adverse effects associated with chronic use and withdrawal effects of topical steroids led to an increasing demand for non-steroid alternatives to the prescription drug. *K. galanga* has been used by traditional practitioners to treat many illnesses because of their abundance and economic viability. However, there is a research gap in the plant's efficacy as a topical medication for the treatment of skin inflammation. The objectives of this research are to extract ethyl *p*-methoxycinnamate from *K. galanga* rhizome by maceration with n-hexane and determine its concentration using GC–MS, as well as to prepare hydrogels from *K. galanga* extract and to assess the physicochemical properties of the hydrogels. *K. galanga* rhizomes were dried and ground before soaked in n-hexane (1:10) at room temperature for 48 hours and filtered. The filtrate was concentrated to a thick extract under reduced pressure and analyzed using GC–MS. Multiple compositions of the carboxymethyl cellulose-based hydrogels incorporating *K. galanga* rhizome extract were then prepared and assessed. The extraction method yielded 5.2619 g (2.63%) of crude *K. galanga* extract. Ethyl *p*-methoxycinnamate was revealed to make up 43.68% of the total component of the extract. The products are non-sticky and non-greasy semi-solid hydrogels with mildly acidic pH, good adhesion, different colors and odors. F-C3 is chosen as the best formulation, however there's a need to improve its pH to better suit the skin needs.

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