

Abstracts (Poster Presentation)

Hydrogel Patch Containing Mangosteen Ethanolic Extract and Its Clinical Safety for Acne Vulgaris Treatment

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Abstract

Introduction: *Garcinia mangostana*, simply known as mangosteen, has long been used as Thai traditional medicine because it was reported antibacterial and anti-inflammatory activities for skin infection treatment.

Objectives: This study aims to develop mangosteen pericarps into a hydrogel patch against acne-inducing bacteria and evaluate its clinical safety.

Methods: The hydrogel patch containing mangosteen ethanolic extract was investigated for antibacterial activity against *Cutibacterium acnes*, *Staphylococcus epidermidis*, and *Staphylococcus aureus*. Its mechanical properties, *in vitro* release, skin permeation, and phase I clinical study of skin irritation and allergic testing by closed patch test were also investigated.

Results: The mangosteen hydrogel patch made from carrageenan and locust bean gum powders was a yellow patch that is smooth, durable, and flexible. This patch was effectively against *Cutibacterium acnes*, *Staphylococcus epidermidis*, and *Staphylococcus aureus*. The active ingredient, α -mangostin, was released and permeated from the mangosteen hydrogel patch within the first 30 min at 33.16% and 32.96%, respectively. Mangosteen ethanolic extract and hydrogel patch showed no irritation in 30 healthy volunteers. However, two volunteers (6.67%) had delayed allergic contact dermatitis to 2-5% mangosteen ethanolic extract and 0.5% (w/w) mangosteen hydrogel patch.

Conclusions: This hydrogel patch containing mangosteen ethanolic extract could be considered as an anti-acne facial mask. Nevertheless, it is not recommended for people who have any reaction to mangosteen.

Keywords: Mangosteen, Anti-acne, Hydrogel patch, Closed patch test

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