

Poster

An antibacterial plastic film made from the mangosteen peel extract

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Introduction. Mangosteen (*Garcinia mangostana* L.) is considered as a queen of fruits in Thailand. Besides being a tasty fruit, the dry peel of mangosteen is also used with lime water to treat blisters and necrotic wounds. The mangosteen peel extract contains a major component called alpha-mangostin, which is responsible for its antibacterial activity against *Staphylococcus aureus*.(1)

Objectives. To prepare an antibacterial plastic film for open wounds.

Methods. 1. Maceration of mangosteen peel with ethanol and subsequent separation by the silica column chromatography. 2. Quantitative analysis of alpha-mangostin by the reverse phase HPLC. 3. Antibacterial evaluation of the extract against *Staphylococcus aureus* by the broth microdilution method.(2) 4. Antioxidant evaluation of the extract by the DPPH scavenging assay.(3) 5. Preparation of antibacterial plastic films which contain 3 different concentrations of mangosteen peel extracts by using pectin and chitosan in lactic acid as a plastic film base. 6. Antibacterial evaluation of the antibacterial plastic films against *Staphylococcus aureus* by the agar diffusion method.(2)

Results. 1. We obtained two sets of mangosteen peel extracts. 2. The analysis revealed that the mangosteen peel extracts contained alpha-mangostin = 71.55 % and 74.43 %. 3. The antibacterial evaluation of both extracts against *Staphylococcus aureus* by the broth microdilution assay revealed that both extracts had the same MIC, i.e. 1.95 microgram/milliliter. 4. The antioxidant evaluation of both extracts using the DPPH scavenging assay showed IC₅₀ = 50.65 microgram/milliliter and 72.38 microgram/milliliter. 5. Three concentrations of mangosteen peel extracts in plastic films were prepared, i.e. 200 microgram/milliliter, 1000 microgram/milliliter and 2000 microgram/milliliter. 6. The antibacterial evaluation of each concentration of plastic films by the agar diffusion method revealed inhibition zones 6.38 mm, 6.77 mm, 7.47 mm, respectively.

Conclusion. We obtained a yellow plastic film which showed some elasticity as well as some antibacterial activity against *Staphylococcus aureus*. The plastic film is ready to be tested for the irritation and efficiency in clinical trials.

Keywords: *Garcinia mangostana*

Selected References

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