



# In vitro antimicrobial effects of mangosteen extract on peri-implantitis microflora in craniofacial implants

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## Abstract

**Introduction:** Craniofacial implants has enabled restoration of congenital and acquired facial defects. However, peri-implantitis of the skin-abutment interface is a common drawback following implant placement.

**Objective:** To determine the antimicrobial effects of mangosteen pericarp extract on peri-implantitis microflora found around craniofacial implants.

**Material and Methods:** The mangosteen pericarp extract was tested against peri-implantitis microflora reference strains of *Staphylococcus aureus* ATCC6538, *Candida albicans* ATCC10231 and clinical strains of *Staphylococcus aureus* and *Candida parapsilosis* by disk diffusion test. Minimum inhibitory concentrations (MIC) and minimum cidal concentrations (MCC) were determined using modified agar dilution millipore method. The extract was further combined with a 50:50 mixture of polyethylene glycol and propylene glycol to form a paste and tested for antimicrobial effects.

**Results:** Mangosteen extract showed inhibitory effects with reference strain of *S. aureus* at MIC and MCC at 1.25 mg/mL and 2.5 mg/mL and clinical strain at 2.5 mg/mL and 5 mg/mL respectively. On the contrary, it showed minimal or no reactivity against *C. albicans* and *C. parapsilosis*. The combination of the extract with polyethylene glycol and propylene glycol also showed a dose dependent inhibitory effect on *S. aureus*.

**Conclusion:** Mangosteen extract had potential antimicrobial effects against *S. aureus*, which can be further studied and developed, to be used in the treatment of microorganism induced infection of skin-abutment interface of craniofacial implants.

**Keywords:** mangosteen, peri-implantitis, craniofacial implants, antimicrobial, microflora

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