Antibacterial Activity studies of *Garcinia mangostana,* against methicillin-resistant *Staphylococcus aureus* (MRSA)

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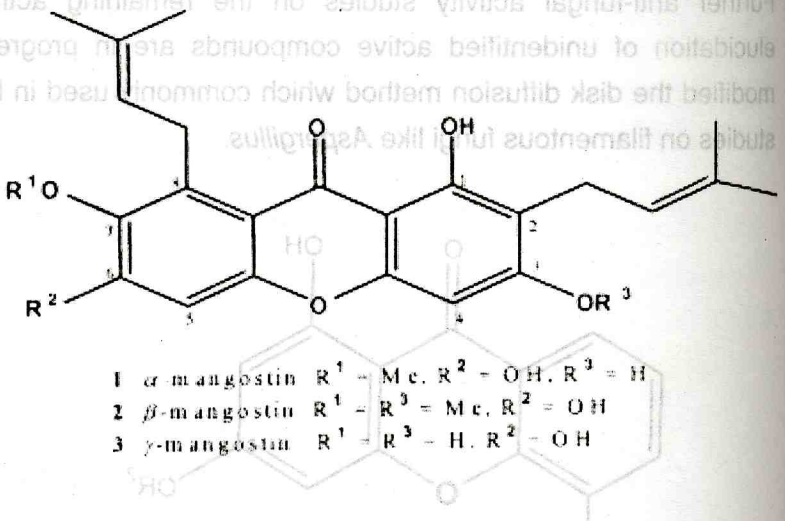
Staphylococcus aureus is a leading cause of infections in long-term health care facilities, and methicillin resistant *Staphylococcus aureus* (MRSA) infections have been increasing worldwide in recent years. It is reported that α-mangostin, a prenylated xanthone isolated from *Garcinia mangostana* has shown antibacterial activity against MRSA. Considering the above, antibacterial activity of all the previously untested extracts and major compounds of *Garcinia mangostana* were tested against isolates of *Staphylococcus aureus* including control *S. aureus* NCTC 6571. Ten extracts and three pure compounds from the leaves, twigs, stem bark and root bark of *Garcinia mangostana* were subjected to anti microbial assays with special reference to MRSA using an agar dilution method. Results indicated activity of a number of extracts against 15 strains (13 MRSA, 1 MSSA and NCTC 6571). Activity guided fractionation showed that their activity is mainly due to the presence of two prenylated xanthones α-mangostin and γ-mangostin. MRSA activity of α-mangostin have been previously reported. In our experiments γ-mangostin showed activity at minimum inhibitory concentrations (MIC) 0.39 - 1.56 μg/mL, for 20 MRSA strains, which appeared comparable with the MICs of presently used antibiotics. According to the above results, γ-mangostin appear to hold promise as an anti-microbial agents in the treatment of infections with *S. aureus* including MRSA, and should be investigated further in appropriate in vivo models.



1 α-mangostin R^1 = Me, R^2 = OH, R^3 = H
2 β-mangostin R^1 = R^3 = Me, R^2 = OH
3 γ-mangostin R^1 = R^3 = H, R^2 = OH

Structure-activity relationship studies of α-mangostin, β-mangostin and γ-mangostin indicated that free 3-hydoxy group in the active compounds may be playing a major role in the activity of α-mangostin and γ-mangostin.

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