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Spatholobus suberectus metabolites inhibit sortase A and sortase A-mediated cell aggregation of Gram-positive bacteria

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The sortase enzymes are a family of Gram-positive transpeptidases responsible for anchoring surface protein virulence factors to the peptidoglycan cell wall layer. Numerous genetic knockout experiments have shown that the sortase A (SrtA) isoform plays a critical role in the pathogenesis of Gram-positive bacteria by modulating the ability of the bacterium to adhere to host tissue via the covalent anchoring of adhesions and other virulence-associated proteins to cell wall peptidoglycan. In this study, 20 flavonoids were isolated from the stem of the medicinal plant *Spatholobus suberectus*. The SrtA activity was determined by quantifying increased fluorescence intensity upon cleavage of a synthetic peptide substrate containing the LPETG motif. Among these isolated compounds, 7-hydroxy-6-methoxyflavanone and formononetin were identified as compounds with promising SrtA inhibitory activity. These compounds also exhibited inhibitory activity against *Staphylococcus aureus* cell clumping to fibrinogen and saliva-induced cell aggregation in *Streptococcus mutans*. The suppression of cell-aggregation activity indicates the potential of these compounds in the treatment of Gram-positive bacterial infections via the inhibition of SrtA.

Biography

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