

N-acyl-homoserine lactone mediated virulence factor(s) of *Pseudomonas aeruginosa* inhibited by flavonoids and isoflavonoids

Abstract

Targeting quorum sensing controlled virulence factor in disease causing *Pseudomonas aeruginosa* has been an effective approach to cope with antibiotic resistance. Plant derivative compounds for example flavonoids and isoflavonoids have been identified as essential molecules of human diet and are known to possess various pharmacological properties. In this study, two flavonoids (apigenin and acacetin) and three isoflavonoids (genistein, daidzein and biochanin A) were investigated against N-acyl-homoserine lactone (AHL) intermediated virulence factor production in *P. aeruginosa*. The virulence factors that were focused in the current study are biofilm formation, synthesis of pyoverdinin, pyocyanin, rhamnolipid as well as exo-polysaccharide. The RT-qPCR was also performed to analyse the virulence genes expression. Based on the experimental studies, it was observed that the flavone acacetin exhibited the strongest inhibition capacity towards all the bacterial virulence factors. Moreover, a significant down regulation in the expression of virulence genes upon treatment with the compounds was observed, suggesting that these compounds are effective targets for anti-quorum sensing approach.

Keywords

Acacetin; Isoflavonoids; N-acyl-homoserine lactone (AHL); *Pseudomonas aeruginosa*; Quorum sensing