

Grapefruit bioactive limonoids modulate E. coli O157:H7 TTSS and biofilm.

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Abstract

Limonoids are important constituents of the grapefruit and other citrus fruits. Research on health benefits suggests that citrus limonoids may act as anti-cancer, cholesterol lowering, anti-HIV and anti-feedant compounds. However, antimicrobial activities of citrus limonoids are not reported. In the present investigation, limonoids were purified from grapefruit seed and evaluated for their potential to antagonize cell-to-cell communication, biofilm formation and expression of Enterohemorrhagic Escherichia coli (EHEC) type three secretion system (TTSS). The results of the present study suggest that, certain limonoids are inhibitory to the cell-to-cell communication, biofilm formation and EHEC TTSS. Specifically, obacunone demonstrated strong inhibition of EHEC biofilm formation and TTSS. Furthermore, obacunone and other limonoids seem to inhibit the biofilm formation and TTSS in quorum sensing dependent fashion. The results indicate that certain grapefruit limonoids may possibly help in antagonizing the EHEC infection process, and may serve as lead compound in development of new antipathogenic molecules.

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