

Screening of antibiofilm and anti-quorum sensing activity using *Vitex trifolia* against pathogens causing infections in Human, aquatic and Soil.

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ABSTRACT:

The focal intent of this study was to find out an alternative strategy for the antibiotic usage against bacterial infections. The quorum sensing inhibitory (QSI) activity of various edible sources especially *Vitex trifolia* collected from India was evaluated against Acyl Homoserine Lactone (AHL) mediated violacein production in *Chromobacterium violaceum* (ATCC 12472), CV026 (violacein inhibition assay), control of virulence gene expressions in *Serratia marcescens* (PSI) isolated from urinary tract infection, *E.coli* collected from soil, Control of bioluminescence in aquatic pathogens like *Vibriyo Harveyi*, *Vibriyo parahaemolyticus*, *Vibriyo vulnificus* (Bioluminescence assay) and control of (EPS) exopolysaccharide production in *Proteus mirabilis* (Swimming & Swarming motility assay). Naturally edible sources were targeted for the inhibition of quorum sensing activity in bacterial pathogens. Out of 10 medicinal plants tested, the methanol extracts of *vitex trifolia* (12mg/ml) inhibited the AHL mediated communication in bacteria. Further, these extracts inhibited the AHL dependent prodigiosin pigment, virulence enzymes such as protease, hemolysin production and biofilm formation in *S. marcescens* (PS1) (Prodigiosin inhibition assay). However, these extracts were not inhibitory to bacterial growth, which reveals the fact that the QSI activity of these extracts was not related to static or killing effects on bacteria. Based on the obtained results, it is envisaged that the methanol extract of *Vitex trifolia* could pave the way to prevent quorum sensing (QS) mediated bacterial infections in human urinary tract. Further studies in inhibition of Quorum sensing activities in bacteria especially in pathogens causing infection in environment can be reduced by providing alternative agents for antibiotic usage.