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AHLs based quorum signaling in the management of food borne pathogens

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Bacterial isolates from various food sources were screened for their quorum signaling using the bio-sensor strain *Chromobacterium violaceum* CV026. The methanolic extract of *Scigium cumini*, was screened for its quorum quenching (QQ) activity. Active components exhibiting the QQ activity were screened by molecular docking analysis. The phytochemical components which exhibited high docking scores were selected for regulating selected QS-dependent phenotypes. Further dynamics simulation was performed to study the conformational changes in LasR receptor upon binding with active components. Out of 86 Gram-negative isolates, three were found to produce AHLs by inducing violacein production in the bio-sensor strain and they were identified as *K. pneumoniae, P. aeruginosa* and *Y. enterocolitica. S. cumini* extract exhibited pronounced quenching activity at the concentration of 4 mg/ml. Molecular docking analysis attributed the QQ activity of *S. cumini* to quercetin and petunidin (docking scores of 7.20 and 8.84 Kcal/mol). On screening the activity of selected active components against QS-dependent phenotypes, both quercetin and petunidin exhibited significant reduction in biofilm formation and EPS production in a concentration-dependent manner. Synergistic activity of conventional antibiotics with petunidin and quercetin enhanced the susceptibility of tested pathogen. Molecular dynamics simulation predicted that QS inhibitory activity occurs through the conformational changes between the receptor and active component complex and the LasR-active components complex was found to be more stable than the LasR-AHL complex. The findings suggest that *S. cumini* and its active components can serve as a novel QS-based antibacterial/anti-biofilm approach for the management of food-borne pathogens.

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Comparative phytochemical screening of Trametes species, a wild mushroom collected from Ondo State, Nigeria

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Phytochemical studies were carried out on the *Trametes* species (L) collected from Ondo, Akure and Ipele districts, Ondo State, Nigeria. Three extracting solvents viz. Ethanol, ethyl acetate and hexane were used in the extraction of bioactive compounds from the fungus. Qualitative and quantitative analysis of nine secondary metabolites (alkaloids, tannins, saponins, flavonoids terpenoid, steroid, phlabotannin, antraquinone and cardiac glycosides) were undertaken. Extract yield was higher in ethanol extract of *Trametes* species when compared to yield from other extracting solvents. All secondary metabolites analyzed were present in all mushroom studied except alkaloids, phlabotannin and antraquinone but at different concentrations. Generally, flavonoid was the most abundant in the mushroom, followed by tannin and saponin. The findings provided evidence that ethanol extracts of these tested mushrooms contain medicinally important bioactive compounds and it justifies their use in the traditional medicines for the treatment of different diseases.

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