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## Quorum-sensing inhibition activity of *Cordyline fruticosa* (L.) A. Chev. (Asparagaceae) leaf extract on the virulence factors of *Pseudomonas aeruginosa* (Pseudomonadaceae)

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uorum-Sensing (QS) signaling systems of pathogens are central regulators for the expression of virulence factors and represent highly attractive targets for the development of novel therapeutics especially for antimicrobial resistant pathogens like Pseudomonas aeruginosa. P. aeruginosa is a Gram-negative nosocomial pathogen that can cause serious complications in immuno-compromised patients through tissue damage by producing QS-controlled virulence factors thus, considered by the World Health Organization as one of the highest priorities in terms of research and development of new antibiotics. The use of natural products as antibiotics is given attention in the recent years. Secondary metabolites have shown antimicrobial activity and some are potential QS inhibitors. The aim of this study is to determine the quorum-sensing inhibition activity of *Cordyline fruticosa* (L.) A. Chev. leaf extract on the virulence factors of *P. aeruginosa*. Extraction was carried out by percolation using methanol as solvent and gave 11.50% yield. Thin layer chromatography was used to ascertain the presence of secondary metabolites in the extract and results showed the presence of flavonoids, alkaloids, tannins, phenols, anthraquinones and anthrones. Acute oral toxicity testing was performed following Organization for Economic Co-operation and Development (OECD) 425 guidelines. The Median Lethal Dose (LD50) obtained is greater than 2000 mg/kg. Liquid dilution method was performed to determine the Minimum Inhibitory Concentration (MIC) and was found to be 0.55 mg/ml. Quorum-sensing inhibition activity of the extract was determined by measuring degree of inhibition of the virulence factors namely pyocyanin production, swarming motility, proteolytic activity and biofilm formation of *P. aeruginosa*. Results showed that the QS inhibition activity is dose dependent. A dose as low as 0.1375 mg/ ml was effective and was statistically not significant with Aspirin (6 mg/ml) on its ability to inhibit pyocyanin production, swarming motility and biofilm formation at  $\alpha$ -0.05. A higher dose of 0.275 mg/mL was able to inhibit proteolytic activity in the same degree as Aspirin, as statistical comparison results showed no significant difference between the two at  $\alpha$ -0.05. Results therefore suggests that a dose of 0.275 mg/ml concentration of C. fruticosa leaf extract inhibited the four virulence factors and may be used as treatment for infections caused by P. aeruginosa. The study suggests that this action may be another way of targeting resistant infections caused by *P. aeruginosa* through quorum-sensing inhibition.

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