

ANTI-BIOFILM AND ANTI-QUORUM SENSING PROPERTIES OF ETHANOL AND AQUEOUS EXTRACTS OF ORTHOSIPHON STAMINEUS AND ANDROGRAPHIS PANICULATA LEAVES AND STEMS

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Introduction: Quorum sensing controls a wide spectrum of processes and phenotypic behaviours including biofilm formation that helps in the survival and virulence of bacteria in hosts. Thus, anti-quorum sensing is suggested to combat bacterial infections. This study aimed to evaluate the anti-biofilm forming and anti-quorum sensing activities which may contribute to the anti-bacterial effect of ethanol and aqueous extracts of *Orthosiphon stamineus* and *Andrographis paniculata* leaves and stems.

Materials and method: General biofilm assay protocol with modification was used for the biofilm assay to test the effect of different concentration (2 mg/ml and 3 mg/ml) of extracts on the biofilm formation by *Pseudomonas aeruginosa*. Optical density of crystal violet/acetic acid solution was measured at 595 nm and the percentage of biofilm inhibition was calculated. In quorum quenching assay, visualization of reporter strain AI1-QQ.1 growth will be used for the detection of bio-molecules interfering with acyl homoserine lactone (AHL).

Results: Extracts with the highest ability to inhibit biofilm formation were ethanol extract of *O.stamineus* stem and *A.paniculata* leaves with 77.84% at extracts concentration of 3 mg/ml. Aqueous extract of *O.stamineus* leaves showed the least potential with 13.41% inhibition. However, aqueous extract of *A.paniculata* showed zero inhibition at 3 mg/ml and two extracts (aqueous extract of *O.stamineus* and *A.paniculata* leaves) gave negative value at concentration of 3 mg/ml and 2 mg/ml, respectively. Quorum quenching assay has yet to be done.

Conclusion: It could be concluded that most of the extracts possess anti-biofilm property.