

P-89**The Study of Caffeine as Novel Quorum Sensing Inhibitor**

Siti Nur Maisarah Norizan*, Kok- Gan Chan and Wai-Fong Yin

Di vision of Genetics and Molecular Biology, Institute of Biological Sciences, Faculty of Science, University of Malaya, Kuala Lumpur 50603, Malaysia; E-mail: outfeet@yahoo.com

Quorum sensing enables bacterial to communicate and at the same time control the gene expression in response to the cell density [1]. It is widely used by both gram-positive and gram-negative bacteria to regulate variety of bacterial physiological functions such as biofilm formation [2], bioluminescence [3], virulence factors [4] and swarming [5] which has been shown contribute to bacterial pathogenesis. With this knowledge, the use of QS inhibitor would be a particular value in treating bacterial pathogenicity and infections. In this work we have tested caffeine as quorum sensing inhibitor by using *C.violaceum* CV026 as a bioassay. This *C.violaceum* CV026 mutant strain is incapable of producing the purple pigment called violacein unless there are exogenous supply of *N*-hexanoylhomoserine lactone (C6-HSL) or other short chain AHL. The Inhibitory activity was measured by quantifying violacein production using a spectrophotometer. The results have revealed that Caffeine significantly reduced violacein production in a concentration dependent manner, indicating inhibition of quorum sensing. The presence of caffeine that exhibit anti-quorum sensing activity may be useful as the lead of anti-infective drugs.

REFERENCES

- [1] Schauder S, Bassler BL. The languages of bacteria. *Genes Dev* 2001; 15: 1468-80.
 - [2] Merritt J, Qi, F, Goodman SD, Anderson MH, Shi W. Mutation of luxS affects biofilm formation in *Streptococcus mutans*. *Infect Immun* 2003; 71: 1972-9.
 - [3] Miller MB, Bassler BL. Quorum sensing in bacteria. *Annu Rev Microbiol* 2001; 55: 165-99.
 - [4] Mellbye B, Schuster M. The sociomicrobiology of antivirulence drug resistance: A proof of concept. *mBio* 2011; 2: e00131-11.
 - [5] Tremblay J, Richardson AP, Lépine F, Déziel E. Self-produced extracellular stimuli modulate the *Pseudomonas aeruginosa* swarming motility behaviour. *Environ Microbiol* 2007; 9: 2622-30.
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