

7th International Conference on

BACTERIOLOGY AND INFECTIOUS DISEASES

June 04-05, 2018 Osaka, Japan

Anti-oxidative and neuro-protective potentials of a novel mangrove soil action-bacterium, *Streptomyces antioxidans* sp. nov. MUSC 164^THooi-Leng Ser¹, Kok-Gan Chan², Bey-Hing Goh^{1,3} and Learn-Han Lee^{1,3}¹Monash University Malaysia Campus, Malaysia²University of Malaya, Malaysia³University of Phayao, Thailand

Over the years, exploring new taxa remains as one of the successful strategies which lead to discovery of therapeutic agents. As the most prolific producer of bioactive compounds, members of *Streptomyces* genus are well known in producing pharmaceutically relevant activities such as anti-inflammatory, antimicrobial, antioxidant activities. During a screening program for bioactive *Streptomyces*, strain MUSC 164^T was recovered from a mangrove soil located in east coast of Peninsular Malaysia. A polyphasic approach revealed that strain MUSC 164^T possessed a spectrum of phylogenetic and chemotaxonomic properties consistent with those of the members of the genus *Streptomyces*. Phylogenetic analysis identified that closely related strains for MUSC 164^T as *Streptomyces javensis* NBRC 100777^T (99.6% sequence similarity), *Streptomyces yogyakartaensis* NBRC 100779^T (99.6%) and *Streptomyces violaceusniger* NBRC 13459^T (99.6%). The DNA-DNA relatedness values between MUSC 164^T and closely related type strains ranged from 23.8±0.3% to 53.1±4.3%. Based on the polyphasic study of MUSC 164^T, it is concluded that this strain represents a novel species, for which the name *Streptomyces antioxidans* sp. nov. is proposed. As an attempt to explore its bioactive potential, the methanolic extract of MUSC 164^T was subjected to several antioxidant assays prior to in vitro neuro-protective screening against hydrogen peroxide (H₂O₂). The extract of MUSC 164^T showed potent anti-oxidative and neuro-protective activities against hydrogen peroxide. The chemical analysis of the extract revealed that the strain produces pyrazines and phenolic-related compounds that could explain for the observed bioactivities. Moreover, in-depth investigations focusing on the genome of MUSC 164^T suggested further bioactive potential of the strain, including production of desferrioxamine B. In short, these promising findings not only highlight the importance of mangrove forest for the discovery of novel streptomycetes in Malaysia, but also suggest potential exploitation of these strains for development of clinically useful drugs against cancer.

Biography

Hooi-Leng Ser is currently pursuing PhD at Monash University Malaysia Campus. Currently, her research focus includes identification of novel *Streptomyces* species derived from mangrove forests before investigating bioactive potential of their secondary metabolites (e.g. antioxidant, anticancer, neuro-protection using human cell lines). She has 2 patents and published 20 ISI-cited journal articles with 12 articles published in Q1 journals.

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