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ABSTRACTS FOR ORAL PRESENTATIONS

Isolation and Characterization of Antibacterial Compounds from *Ganoderma boninense* Against Methicillin-Resistant *Staphylococcus aureus* (MRSA)

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Background: Community and nosocomial-associated methicillin-resistant Staphylococcus aureus (MRSA) infections in Malaysian healthcare setting are terrifically increasing in recent years. There is an urgent need for an effective antibacterial agent to cope with this important issue. Due to the development of new antibiotics is not parallel with the increase of cases of infections, researchers have initiated isolation of compounds from natural resources to develop new potent therapeutic agent. Meanwhile, Ganoderma boninense is an oil palm devastating pathogen, which has been known to contain many bioactive compounds that might be potential to be developed as a new source of therapeutic agent. **Objectives:** To isolate and characterize antibacterial compounds from Ganoderma boninense against methicillin-resistant Staphylococcus aureus (MRSA). **Methods:** Liquid-liquid extraction (LLE) using methanol:chloroform:water (1:1:1) was developed for preliminary isolation of antibacterial compounds from Ganoderma boninense. Active fractions from the LLE were screened for their antibacterial activity using High Performance Thin Layer Chromatographic (HPTLC) bioautography through gradient solvent system separation. The composition of the compounds from the active bands of HPTLC bioautography against methicillin-resistant Staphylococcus aureus (MRSA) was further identified with various dereplication methods including the combination of High Performance Liquid Chromatography (HPLC),

Gas Chromatography-Mass Spectrometry (GC-MS), Fourier-Transformed Infrared (FTIR) spectroscopy, and Two-Dimensional Nuclear Magnetic Resonance (2D-NMR) spectrometry. **Results:** Compound identification using various dereplication methods revealed the possible antibacterial compounds are Ergosta-5,7,22-trien-3β-ol or Ergosterol (m/z = 396.65, MF = C28H44O) and 1,5,5′-Trimethyl-4,8-dioxo-6-isopropenyl -8′-ethyl-5′, 8′-epoxy-4a,8a-didehydro-1,4′- ethanospiro [decalin-2,3′-oxocane]-5-propionic acid methyl ester or Ganoboninketal (m/z = 498.66, MF = C30H42O6) which belong to family of 3,4-seco-27-norlanostane triterpene. Both compounds exhibited promising antibacterial activity against methicillin-resistant Staphylococcus aureus (MRSA). **Conclusion:** The present study successfully isolated and demonstrated the activity of two new antibacterial compounds; Ergosterol and Ganoboninketal from Ganoderma boninense against methicillin-resistant Staphylococcus aureus (MRSA).