World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:11, No:11, 2017

Antibiotic Potential of Bioactive Compounds from a Marine Streptomyces Isolated from South Pacific Sediments

Authors : Ilaisa Kacivakanadina, Samson Viulu, Brad Carte, Katy Soapi

Abstract : Two bioactive compounds namely Vulgamycin (also known as enterocin A) and 5-deoxyenterocin were purified from a marine bacterial strain 1903. Strain 1903 was isolated from marine sediments collected from the Solomon Islands. Morphological features of strain 1903 showed that it belongs to the genus Streptomyces. The two secondary metabolites were extracted using EtOAc and purified by chromatographic methods using EtOAc and hexane solvents. Mass spectrum and NMR data of pure compounds were used to elucidate the chemical structures. In this study, results showed that both compounds were strongly active against Wild Type Staphylococcus aureus (WTSA) (MIC < 1 µg/mL) and in Brine shrimp assays (BSA) (MIC < 1 µg/mL). 5-deoxyenterocin was also active against Rifamycin resistant Staphylococcus aureus (RRSA) (MIC, 250 µg/mL) while vulgamycin showed bioactivity against Methicillin resistant Staphylococcus aureus (MRSA) (MIC 250 µg/mL). To the best of our knowledge, this is the first study that showed the bio-activity of 5-deoxyenterocin. This is also the first time that Vulgamycin has been reported to be active in a BSA. There has not been any mechanism of action studies for these two compounds against pathogens. This warrants further studies on their mechanism of action against microbial pathogens.

Keywords : 5-deoxyenterocin, bioactivity, brine shrimp assay (BSA), vulgamycin
Conference Title : ICNP 2017 : International Conference on Natural Products
Conference Location : Melbourne, Australia
Conference Dates : November 29-30, 2017