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Heavy-Metal Tolerance and Antibiotic Susceptibility of Red Pigmented Bacteria Isolated from Marine Environment

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Author(s)

Mahtab Jafarzade, Suhaiza Mohamad, Gires Usup, Asmat Ahmad

ABSTRACT

This study was undertaken to determine heavy metal resistance and antibiotic susceptibility of three non-pathogenic red pigmented bacteria namely WPRA3, SM11-3j and SC-G18, isolated from marine environments of Malaysia. The bacteria isolates were identified by 16S rRNA sequencing and by biochemical and morphological tests. The 16S rRNA gene sequences of all isolates showed $\geq 96\%$ similarity to *Serratia* spp. Antibiotic susceptibility test of isolates was assayed according to the Kirby-Bauer disc diffusion method. All isolates were highly resistant to beta-lactam antibiotics, but were susceptible to quinolone antibiotics. Minimum inhibitory concentration (MIC) of nine heavy metals (Ni^{2+} , Co^{2+} , Cr^{3+} , Zn^{2+} , Mn^{2+} , Pb^{2+} , Hg^{2+} , Cd^{2+} and Cu^{2+}) against the bacteria isolates were determined via the plate-dilution method. The isolates exhibited resistance to Ni^{2+} , Co^{2+} , Cr^{3+} and Zn^{2+} . Isolates WPRA3 and SM11-3j showed higher multiple tolerances to heavy metals. The results obtained indicate that bacteria from marine environments of Malaysia present interesting metabolic activities, which should be studied and explored for potential biotechnological applications.

KEYWORDS

Antibiotic Susceptibility; Heavy Metal Resistance; *Serratia* sp; Marine Bacteria

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