

Isolation and Characterization of Surface and Subsurface Bacteria in Seawater of Mantanani Island, Kota Belud, Sabah by Direct and Enrichment Techniques

Abstract

The distribution of hydrocarbon-utilizing bacterial may vary between surface and subsurface of the seawater. One of the identified contributors is the Total Petroleum Hydrocarbon. The isolation and characterization of bacteria using Direct and Enrichment techniques helps in identifying dominant bacterial populations in seawater of Mantanani Island, Kota Belud, Sabah, potential of further investigation as hydrocarbon degrader. Crude oil (5% v/v) was added as the carbon source for bacteria in Enrichment technique. For surface seawater, the highest population of bacteria identified for both Direct and Enrichment technique were 2.60×10^7 CFU/mL and 3.84×10^6 CFU/mL respectively. Meanwhile, for subsurface seawater, the highest population of bacteria identified for both Direct and Enrichment technique were 5.21×10^6 CFU/mL and 8.99×10^7 CFU/mL respectively. Dominant species in surface seawater were characterized as *Marinobacter hydrocarbonoclasticus*-RMSF-C1 and RMSF-C2 and *Alcanivorax borkumensis*-RMSF-C3, RMSF-C4 and RMSF-C5. As for subsurface seawater, dominant species were characterized as *Pseudomonas luteola*-SSBR-W1, *Burkholderia cepacia*-SSBR-C1, *Rhizobium radiobacter*-SSBR-C3 and *Leuconostoc-cremois*-SSBR-C4.