

## Documents

Dehimi, M., Yusof, F., Raus, R.A., Hadry, N.F., Nedjai, R.

**Genotypic and Phenotypic Characterisation of Isolated Marine Bacteria and its Potential to Produce Alkaline Protease**

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Faculty Engineering, International Islamic University Malaysia, Malaysia

**Abstract**

In several industries such as food and detergent, enzymes are commonly used out of which microorganisms' proteolytic enzymes are dominant. Microorganisms from marine sources have advantageous commercial characteristics when it comes to protease production. Protease producing bacterial strains were isolated from four different stations in the South China Sea, located at Kuantan, Pahang-Malaysia. The temperature was ranging from 29 to 36.2°C; salinity varied from 36,18 to 37,9 ppt, turbidity from 10.21 to 16.4 NTU. Dissolved Oxygen had an average of 4.44 mg/mL, and pH was around 8. All the bacterial strains were screened for protease activity using Skim Milk agar plates. Out of 18 isolates, ten strains formed a clear zone on skim milk agar plates. Molecular identification by 16S rRNA results revealed that *Bacillus* spp was the most dominant bacteria, four isolates belong to *Bacillus cereus*, another 04 identified as *Bacillus licheniformis* in addition of one isolate was *Bacillus safensis*. They were followed by one isolate *Staphylococcus warneri*. Furthermore, a phenotypic characterization is conducted using The Biolog GENIII MicroPlate with 94 phenotypic tests. These tests consist of 71 carbon source utilization assays and 23 chemical sensitivity assays. The proteolytic activity was confirmed through a quantitative protease assay. Where the strain *B. cereus*-MD152 was the highest yield, followed by *B. licheniformis*-ABN13. On the contrary, the lowest yield was secreted by *B. cereus*-IUM6 with no more than 16.5 U/ml. © 2021, Penerbit Akademia Baru. All rights reserved.

**Author Keywords**

bacteria characterisation; bacteria identification; marine *Bacillus*; Protease production

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**Correspondence Address**

Yusof F.; Faculty Engineering, Malaysia; email: yfaridah@iiium.edu.my

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