Abstract

The extracellular protease-production capacity of 33 bacterial isolates taken from marine biotopes in King George Island, Antarctica, was evaluated in liquid cultures. The P96-47 isolate was selected due to its high production capacity and was identified as Pseudoalteromonas sp. The optimal growth temperature was 20 °C and the optimal for protease production was 15 °C. Proteases were purified from culture supernatants, developing a multiple-band profile in zymograms. They were classified as neutral metalloproteases and worked optimally at 45 °C with an Eact of 47 kJ/mol. Their stability was higher at neutral pH, retaining more than 80% of activity at pH 6-10 after 3 h incubation at 4 °C. After 90 min incubation at 40 and 50 °C, the percentages of residual activities were 78% and 44%. These results contribute to the basic knowledge of Antarctic marine proteases and also help evaluate the probable industrial applications of P96-47 proteases.

Keywords

Pseudoalteromonas sp., Antarctic bacteria, proteases, sychrotolerant bacteria, sychrophiles