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Characterization of a Thermostable Alkaline Protease Producing Bacterial Strain

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The objective of this study was to characterize one of the selected bacterial strains, among the five locally isolated alkaline protease producers (strains DS_1, DS_2, DS_3, DS_4 and DS_5) from dog decaying soil. These five strains produced the alkaline proteases, which were active at pH 9.5 and 70°C. The properties of the enzyme produced by the strain DS_4 indicated its potential use in industrial applications and considered for identification. Strain DS_4 is non-branching, gram-positive, sporulating, motile, facultative aerobic, catalase positive, β-hemolytic, oxidase positive long rods. Hence it belongs to Genus *Bacillus*. Ellipsoidal shaped subterminal to central endospores were observed in 24h old cultures. It has the ability to produce acid from glucose, while does not produce acid from xylose and mannose. It grew at 50°C. It was able to hydrolyze starch and tyrosine, but did not produce urease and indole. It reduced nitrate. It has the ability to grow in $70gL^{-1}$ NaCl.Based on these biochemical tests the strain DS_4 was expected to be *Bacilluscereus.* By the 16S rDNA sequencing, the strain DS_4 was confirmed to be belonging to the Kingdom: Procaryotae; Division: Bacteria; Order: Bacillales; Family: Bacillaceae; Genus: *Bacillus*; Species: *cereus.*

Key words: Protease, biochemical tests, gene sequence, morphology, strain, genus.