

Exploration and Characterization of a Novel Extremophile, *Exiguobacterium* sp.

Anil Kumar

Rita Kumar

Environmental Biotechnology

Institute of Genomics and Integrative Biology

INDIA

anilcbt@yahoo.com

The isolation and characterization of microorganisms which are able to thrive in extreme environments are receiving a great deal of attention in astrobiological research as driven by the possibility of their existence in our solar system's extreme exobiological niches. Present work deals with the isolation strategy for alkaliphilic bacteria, identification and their environmental applications. For isolation, soil sample of high alkalinity was taken from the old industrial sludge. Different concentrations of soil extract mixed with alkaline bacillus medium were used as a media to entrap the desired micro flora after enriching the soil in soil extract for two days at 120rpm/32⁰C. On the basis of high pH tolerance (12.0), a rod shaped and yellow colored alkaliphilic bacterium was screened which can thrive at high pH (12.0). This bacterium is a gram positive, non-motile, oxidase negative and produces acids from glycerol, cellobiose, D-mannose, mannitol, methyl α -D-glucoside, amygdalin and arbutin. Partial 16S rDNA sequence shows a similarity of 99.4% to *Exiguobacterium aurantiacum* strain ' Z8' but physiological results are different which show its novelty. This kind of bacteria, which are capable to grow in extreme conditions, can provide some insight to explore the life in other planets.