

A culture dependant biodiversity study of extreme haloalkaliphilic bacteria from Magadi soda Lake Kenya

The present study that aimed at studying the microbial ecology of Lake Magadi, isolated 37 isolates from Lake Magadi using mineral and carbon rich media types. They were characterized by cultural, biochemical and molecular approaches and screened for the ability to produce useful biotechnological enzymes and biomolecules. Screening was done by plating on basal media supplemented with the respective substrate. 34 of the isolates were Gram positive, one was Gram negative and two were Gram variable. Most of the isolates grew well at pH ranging from 6.0 – 11.0, (optimum 9.0-10.0), temperature range of 20-45°C (optimum of 30-35°C) and salinity range of 5- 30 %, optimum growth was noted at 10-15% salinity, showing that they are true haloalkaliphiles. 15 isolates produced various extracellular enzymes such as amylases, lipases and proteases. Partial sequence blast analysis showed that the bacteria belonged to genera *Bacillus*, *Clostridium* and *Halomonas*, with relative abundances of 54%, 38% and 8% respectively. The similarity values of some of the isolates to their closest neighbours (78% 80%, 84%, 85%, 88% and 94-97%) show that they may represent new species or novel genera respectively within the lake ecosystem. The study results show that Lake Magadi harbours ecologically important micro-organisms which also have the potential for application in the biotechnology industry.