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***Title: Studies on bacterioplankton and inhibitory strains of aquatic actinomycetes in lake Bardawil, Egypt***

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***Abstract:***

Lake Bardawil represents a hyper-saline shallow (50-600 cm deep) water basin lying along the northern shore of Sinai. Surface water samples were collected monthly from this lake for physico-chemical and microbiological analysis. Seasonal variations in the averages of temperature, pH and transparency of the tested water samples were determined. Seasonal averages of the total bacterial counts at 22 and 37 C. biovolumes of cells and bacterial biomass of the lake's water at different regions were also determined. In addition to the gram-negative pathogen, *Edwardsiella tarda*, faecal contamination indicators, total coliforms, faecal coliforms and faecal streptococci were counted in the lake's water samples from various regions during different seasons. The number of actinomycetes per milliliter of the lake's water samples were determined. Fifteen actinomycetes were isolated and screened for their antibacterial activity against *E. coli* and pathogenic *E. tarda* isolated from the same water samples. Five isolated of these actinomycetes showed antibacterial activities and nine of them were identified as streptomycetes. The most antibacterially active isolate was subjected to morphological and biochemical studies and identified as *Streptomyces viridiviolaceus*. The identified organism exhibited antimicrobial activities against the main indicator of water pollution, *E. coli*, pathogenic *E. tarda*, *Corynebacterium michiganense* B-33, *Pseudomonas solanacearum* B-3212 and *Staphylococcus*. No antimicrobial activities were recorded against *Bacillus cereus*, *Micrococcus*, *Mycobacterium*, *Aspergillus niger*, *Candida albicans*, *C. tropicalis* or *Rhizopus nigricans*.

***Key words:***

Lake Bardawil, Bacteria Cell volume, Biomass, Bacterial indicators, *Edwardsiella tarda*, Actinomycetes. Antimicrobial activity.