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## THE BIOFILMS FORMATION OF *Exiguobacterium* sp. S17 ON SYNTHETIC SUPPORTS AND UNDER THE INFLUENCE OF ARSENIC

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The high-altitude Andean Lakes (HAAL) are ecosystems located in the South American Andes. These ecosystems are unique due to their geographical characteristics, their broad range of extreme environments, as well their abundant biodiversity. The genus *Exiguobacterium* is one of the most widespread and representative genera on the HAAL, being detected by direct (pure culture isolation) and indirect (DGGE) techniques. This genera have been isolated or molecularly detected from a wide range of habitats including cold and hot environments with temperature between -12 and 55°C. This fact confers substantial interest to the genus as a potential model system to research attributes that may correlate with adaptation and evolution of organisms to diverse thermal regimes. *Exiguobacterium* sp. S17 is a high arsenic resistant polyextremophilic bacteria isolated from the stromatolites of L. Socompa. This strain is able to grow readily in laboratory and represents an attractive model system for the study of environmental stress. Previous studies showed that *Exiguobacterium* sp. S17 is able to resist to high arsenic concentration and to produce biofilm. The aim of this work was to assess biofilms formation by *Exiguobacterium* sp. S17 in different synthetic supports and to investigate the influence of arsenic (As[III] y As[V]) in their development. Determination and quantification of biofilms was measured using crystal violet 1% following the methodology proposed by Tomaras et al., (2003). Biofilms production was evaluated at different incubation times (24, 48 and 72 h) in $LB_{50}$ media (without As) and in different synthetic supports: sterile glass tubes (15 x 125mm) and polypropylene (12 x 75 mm) and polystyrene plates (20 $cm^3$). The influence of As was investigated supplemented $LB_{50}$ with arsenate (As[V]): 50mM, 100 mM, 150 mM, 200mM, 250mM and arsenite (As[III]): 2.5 mM, 5mM, 7.5 mM, 10 mM, 12.5 mM at the same time. ANOVA analyzes revealed that the optimal production of biofilms is achieved after 24 hours of growth and the highest biofilm production was obtained when using glass as support and adding arsenate (As [V]100 mM). No significant differences were observed when adding arsenite in comparison to control medium (without arsenic). The findings obtained in this work made an important contribution to the knowledge of the biology and ecology of the microbial communities of the HAAL in response to stress factors. Moreover, this method can be applied for the benefit of human and environmental health by establishing an experimental basis for a bioremediation method. Furthermore, we propose that HAAL is a source of novel bacterial species of biotechnological interest.

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## INSECTICIDAL POTENTIAL OF *Serratia* sp. ON LARVAE OF *Aedes aegypti*

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Some arthropods are agents transmitting diseases for public health importance. At present, indiscriminate use of synthetic insecticides generates environmental pollution, insect resistance and human toxicity. An alternative for insect control consists of obtaining molecules of bacterial origin with insecticidal activity. Some species within the genus *Serratia* are pathogenic to insects. The present work evaluated the potential insecticidal effect of *Serratia* sp. LB-1 isolated from the external cuticle of an entomopathogenic nematode (*Steinernema* sp.) on larvae of *Aedes aegypti* (mosquito that transmits dengue and chikungunya viruses).Bacteria were multiplied on culture with brain-heart medium for 48 h. Concentration was determined by optical density; then the bacterial phase was separated from the supernatant by centrifugation. Bacteria were suspended in sterile water and a series of dilutions ($1x10^5$, $5x10^5$, $1x10^6$, $5x10^6$, $1x10^7$, $1.5x10^7$, $2.5x10^7$ UFC/ml) were performed. The supernatant fraction was diluted in the same proportion as each one of the mentioned concentrations. Ten III and IV-stage larvae were placed in tubes containing 4 ml of each dilution; mortality was evaluated at 24 and 48 h. The experiment was performed at 25ºC, with 8 replications per treatment. At 24 h, the highest mortality percentages were observed in the $1.5x10^7$ and $2.5x10^7$ supernatant dilutions, with values ranging between 50-100%. At 48 h, $1x10^7$, $1.5x10^7$, $2.5x10^7$ dilutions produced between 80-100%