

TITLE: EVALUATION OF THE GROWTH PROFILE OF *Exiguobacterium antarcticum* B7 BY DIFFERENT ABIOTIC CONDITIONS.

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ABSTRACT: The Antarctica Comandante Ferraz Station, located on King George Island, is responsible for several lines of research that bring great impact to the scientific environment at national and international level, identifying species present in this ecosystem that develops in adverse conditions from the point of view anthropocentric. Among the species identified as the bacterium *E. antarcticum* strain B7, it was isolated in a defrosting lake in this region (Ginger Lake). This is a well described strain in the literature with studies in different omic approaches, which allowed the identification of genes coding for proteins related to adaptive mechanisms in cold environments and with biotechnological application. In order to gain a better understanding of the basic biology of growth of this microorganism, this study carried out a series of phenotypic assays, subjecting the bacteria to different conditions of temperature, pH and NaCl concentration. For these tests a sample colony was inoculated into 10 ml of TSB medium and grown overnight at 37°C under 180 rpm. After growth the OD was measured at an absorbance of 600 nm (0.5-0.6). From the adjusted culture, 3 spots were inoculated at concentrations of 10⁻⁰, 10⁻¹ e 10⁻² in TSA medium supplemented with NaCl at the concentrations of 0.5%, 10%, 12%, 15%, 20% and 25%; pH 5, 7, 8, and 10; and without supplementation incubated at temperatures of 4°C, 20°C, 25°C, 37°C and 50°C. The growth was followed for 72 hours and made in triplicate. In the NaCl assay all concentrations tested showed growth in 24 hours, however the concentration considered optimal was 0.5%. The bacteria showed a better growth at pH 8 after 24 hours. The temperatures of 20°C, 25°C, 37°C showed growth in 24, 48 and 72 hours, however the sample grown at 25°C showed better growth. The pH, NaCl and temperature are important factors in the conformation of the cell membrane composition, regulation of homeostasis, adaptation and cellular viability;

and are required by the bacteria under adverse conditions. Finally, this study provided important information regarding the growth profile of *E. antarcticum* B7 under optimum conditions of cultivation, which may serve as a basis for future research into the application of this bacterium in the biotechnology industry.

Key words: *Exiguobacterium antarcticum* B7, pH, temperature, NaCl, biotechnology.

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