

TITLE: INFLUENCE OF CULTURE CONDITIONS ON ANTIBACTERIAL ACTIVITY OF *Scenedesmus obliquus* ISOLATED FROM SEMIARID REGION OF BRAZILIAN NORTHEAST

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ABSTRACT:

Among the microorganisms, microalgae are distinguished by production of diverse natural compounds. In the search for new antimicrobial agents, microalgae also represent important source of natural substances with biological activity, highlighting their potential in the production of compounds with antibacterial action. This work aimed to evaluate the antibacterial activity of *Scenedesmus obliquus* previously isolated from semiarid region of Brazilian northeast. It was hypothesized that different culture media influence quantitatively and qualitatively the production of compounds with antibacterial activity by *S. obliquus*. For this, the *S. obliquus* was cultivated in three culture media: Bold's Basal Medium (BBM), Provasoli and modified BBM, under constant aeration, photoperiod of 24 hours and 3000 lux, and treated with tannin and ferric chloride flocculants. Crude extracts (CE) of fresh biomass of *S. obliquus* were obtained using the solvents ethanol P.A. and ethyl acetate, then sonicated for 30 minutes and kept under 35°C for 24 hours. After solvents evaporation, the initial concentration of 100 mg/ml of each CE were obtained and used as initial concentration for broth microdilution test in a 96 multiwell plate against *Klebsiella* sp. and *Salmonella* sp. The concentrations of 50 mg/ml, 25 mg/ml, 12.5 mg/ml and 6.25 mg/ml of each CE were used and the inhibitory minimum concentration (IMC) was determinate. For the test, 200 µl of the culture medium nutrient broth, 200 µl of each CE and 10 µl of bacterial (1.5×10^8 cells/ml) were added in each well, and the plates were kept under 35 ° C for 24 hours. After this period, the IMC was determined by the lower CE concentration that inhibits bacterial growth. As results, no bacterial inhibition was detected in any of the treatments tested. Considering *S. obliquus* is reported as antibacterial compounds producer, we assumed that (1) the concentrations of the CE were not enough to inhibit the bacteria, or (2) the bacteria used in this work is naturally resistant to the compounds produced by this strains of *S. obliquus*. Studies show that the antimicrobial compounds are mainly due to the microalgae species and the types of extracts used, evidencing the need of research that address different methodologies to explore biotechnological potential of *S. obliquus*.

Keywords: antibiotics, Chlorophyceae, bioactive compounds