Title: EVALUATION OF CADMIUM RESISTANCE IN ASSOCIATED BACTERIA WITH THE AQUATIC PLANT *Pistia stratiotes*

Authors: DANIEL, C.B[1], INTORNE, A.C[2]

Instituição: [1] Faculdade Multivix Cachoeiro – Instituto de Ensino Superior do Espírito Santo (Rod. Gumercindo Moura Nunes, 134 – Alto Novo Parque – Cachoeiro de Itapemirim, ES), [2] UENF – Universidade Estadual do Norte Fluminense Darcy Ribeiro (Av. Alberto Lamego, 2000, Campos dos Goytacazes - RJ).

Resumo:

Human action has arranged numerous pollutants in the environment, among these the heavy metals. Heavy metals can be entered in nature by natural processes such as soil erosion, volcanic activity or can be inserted through anthropogenic activities, such as industrial, mining, agriculture, burning of fossil fuels among others. The aquatic environment is the main affected ecosystem, because these compounds seep into the soil and reach groundwater aquifers, or are dumped directly into water bodies. Heavy metals are characterized by not being biodegradable, so they can accumulate in the environment which expresses their toxicity. Cadmium is an extremely toxic metal known for its carcinogenic and neurotoxic. Industrial, batteries and fertilizers are main cadmium contamination sources. One alternative proposed to reduce the impact of this heavy metal pollution is the use of bioremediation. Bioremediation is the use of living organisms, like plants, fungi and bacteria for removing these pollutants. These bodies incorporate heavy metals into their metabolism through several mechanisms, and produce from these inert compounds. Aquatic weeds are organisms known for their ability to remedy the environment. *Pistia stratiotes*, a free-floating aquatic weed, popularly known as water lettuce, is described as biorremediador plant. Some studies reveal that the interaction between plants and bacteria may contribute to the survival of these organisms, such as weeds, in contaminated environments. In this sense, our objective is to evaluate the resistance of bacteria associated to aquatic macrophyte *P. stratiotes* to cadmium. For this, it determined the Minimal Inhibitory Concentration (MIC) of the isolates. Previously isolated bacteria were grown until $O.D._{600\ nm}$ = 1.0 and then three drops (5 µL) of the culture were inoculated in DYGS containing different concentrations of cadmium (0,1; 0,5; 1; 5 e 10 mM). The plates were incubated for 72 h at 30 ° C. Seven isolates showed MIC above 5 mM. Four isolates showed MIC above 10 mM. The results showed that such isolates are very resistant to cadmium and have biotechnological potential to remediate contaminated environments. Thus, in the next steps will be tested the ability of these bacteria in bioremediation of heavy metals in association with *P. stratiotes*.

Keywords: Aquatic environment; metal; bioremediation; interaction plant-bacteria.

Agência Fomento: CNPq; FAPERJ, UENF