

**Title: RESISTANTE TO MERCURY OF ENDOPHYTIC BACTERIA OBTAINED IN CONTAMINATED SITES**

**Authors:** <sup>1</sup>Mello, I.S., <sup>1</sup>Pietro-Souza, W., <sup>1</sup>Liotti, R.G., Barros, B.M., <sup>2</sup>Bichara, K. P.A., <sup>2</sup>Silva, G. F., <sup>1</sup>Almeida, E. G., <sup>1</sup>Soares, M. A.

**Institution:** <sup>1</sup>UFMT – Universidade Federal de Mato Grosso Mato Grosso (Av Fernando Correa da Costa, No. 2367, Cuiabá -. MT - 78060-900). <sup>2</sup>CPAA - Embrapa Western Amazon (AM-10 Highway, Km 29, Manaus / AM-Brazil - 69010-970).

**Resume:**

Strategies for remediation of soils contaminated with mercury (Hg) are important and necessary. Several bacterial species interfere with biogeochemical cycle of mercury and are potential tools in bioremediation and/or phytoremediation programs. These bacteria are resistant to mercury and the main mechanism of resistance is mediated by proteins codificated by operon *mer*. This study aims to determine the level of resistance to mercury of endophytic bacteria and detect the presence of *merA* gene. Eight endophytic strains were analyzed (*PJE2*, *PJE6*, *PJE7*, *PJE8*, *PJE15*, *PNA22*, *PNA23*, *PNA24*). These strains come from growing in contaminated with mercury (*PJE*) and uncontaminated (*PNA*) sites at the city of Poconé. The resistance to mercury was determined by minimum inhibitory concentration (MIC) in LB broth medium with 0, 15, 30 e 45 mg.mL<sup>-1</sup> of Hg. The cellular growth was accompanied by spectrophotometry at 600nm every three hours for 3 days. The gene *merA* was detected by PCR using 3F (CGT SAA CGT SGG STG CGT GCC STC CA) and 3R (CGA GCY TKA RSS CYT CGG MCA KSG TC) primers and the following amplification conditions: 95 °C for 5 min, 35 cycles of 94 °C for 1 min, 68 °C for 60 s, and 72 °C for 1:40 min, final extension of 72 °C for 10 min and 12 °C for 30 min. Two strains (*PNA22* e *PNA24*) showed tolerant to mercury into concentration of 15 mg.mL<sup>-1</sup>. *PJE23*, *PJE2* and *PJE8* showed tolerant MIC until concentration of 30 mg.mL<sup>-1</sup>. Three strains (*PJE6*, *PJE7* and *PJE15*) were not inhibited in the tested concentrations of the mercury. The gene *merA* was amplified in lineages with highest MIC to mercury: *PJE2*, *PJE6*, *PJE7* and *PJE15*. This results indicate that plants present in contaminated areas by mercury host endophytic bacteria more resistance to this heavy. The role of these bacteria in phytoremediation will be investigated.

**Key words:** Tolerance, wetland, contaminant.

**Agência Fomento:** CNPq, Capes and FAPEMAT.