

**TITLE:** ISOLATION AND SELECTION OF MICROBIAL LINEAGES OF ARROIO DOURADO STREAM WITH POTENTIAL DEGRADATION OF PHARMACEUTICALS

**AUTHORS:** GRIGNET, R.S.; BARROS, M.G.A; PANATTA, A.A.S.; BERNAL, S.F.; OTTONI J.R.; PASSARINI, M. R. Z.; GONÇALVES, C.C.S.

**INSTITUTE:** UNIVERSIDADE FEDERAL DA INTEGRAÇÃO LATINO-AMERICANA (Campus Jardim Universitário – Lab. Microbiologia Ambiental- Av. Tarquínio Joslin dos Santos, 1000 - Foz do Iguaçu - PR, J. Universitário 85870-650).

**ABSTRACT:**

The detection of pharmaceutical micropollutants in wastewater and natural water has raised concern in the scientific community due to their occurrence, persistence and potential harm to human health and biogeocenosis. Given this, the use of bioremediation methods is required to treat these contaminants. This study aims to isolate microorganisms associated with sediment samples from the Arroio Dourado stream, located in the city of Foz do Iguaçu, Western Paraná. Collections were carried out in February 2021, in the morning, at two points: one downstream of the old dump (point 1), a place with agricultural activity, and one upstream (point 2), with abundant riparian forest. Temperature and pH were measured on site, with values of 23.9°C and 24.6°C, and 5 and 6, respectively. The samples were subjected to enrichment in minimal environment with 0.5% glucose, supplemented with a solution of 5 therapeutic classes of medical drugs, including analgesics and non-steroidal anti-inflammatory medicines (dipyron, acetylsalicylic acid, paracetamol, ibuprofen, diclofenac), antidepressants (amitriptyline and fluoxetine), hormones (estradiol) and antimicrobials (amoxicillin and fluconazole) at the clinical concentration of each drug. The samples were incubated for 48 h at 28 °C and 150 rpm. Serial dilutions were performed, and the samples were seeded in NA and PDA culture media, at 37 °C and 28 °C, for bacteria and fungi, respectively. Colonies were isolated by differences in morphological aspects. 106 isolates were recovered, of which 48.12% were bacteria, 17.92% filamentous fungi and 33.96% yeast. The largest number of isolates was recovered from point 2, accounting for 54.72% of the isolated strains. Cell susceptibility tests with 0.5% TTC and drugs at a concentration of 10 mg.L<sup>-1</sup> were performed with the fungal strains. Preliminary results show that 26.31% of the isolates were resistant to most treatments. The therapeutic class that most favored the growth of drug-tolerant strains was estradiol (hormone), especially for bacteria and yeast. Therefore, it is evident that there is a great abundance and microbial diversity present in the stream sediment, which is possibly affected by the flow of medical drug residues and micropollutants from the old deactivated dump, and whose bioremediation potential can be considered promising on the treatment of pharmaceutical components.

**Keywords:** Bioremediation, Arroio Dourado, tolerance, micropollutants, pharmaceuticals.