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ISOLATION OF MICROORGANISMS IN EFFLUENTS FROM A PUBLIC HEALTH LABORATORY

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The waste from health facility laboratories consists largely of liquid effluents from automatic analyzers. In practice, these effluents are typically discharged into the sewer system without any prior treatment. Automatic analyzers use disinfectants, detergents, cleaning solutions, and other reagents that may eliminate pathogenic microorganisms. As a result, they generate effluents with a high load of chemical contaminants. If discharged directly into the sewage system without prior treatment, these contaminants can be considered a point source of various residual antimicrobial compounds and other pollutants that may promote the development of antimicrobial resistance. The objective of this study is to isolate environmental microorganisms capable of growing and degrading the chemical contaminants present in effluents generated by the analysis equipment and staining process of the Clinical Analysis Laboratory at Julio C. Perrando Hospital, located in Resistencia, Chaco Province. Three effluent samples were obtained from two clinical analysis laboratory devices and from the effluents generated in the staining process of the emergency department of the Clinical Analysis Laboratory at Perrando Hospital, located in the city of Resistencia. The monitored devices were the Hemogram Cell-Dyn Ruby ABBOTT and the Chemical Analyzer Cobas c 311 Roche HITACHI. Samples were collected directly from the disposal system of the equipment and dyeing waste, using previously disinfected opaque plastic containers. The process of bacterial and fungal isolation was carried out in two stages. First, an enrichment period was conducted using effluent concentrations of 10%, 50%, and 100% v/v in nutrient broth for bacteria and Sabouraud broth for fungi, incubating them for 72 hours at 30°C. After, Petri dishes were inoculated using streak plating on nutrient agar to isolate bacteria and point inoculation on Sabouraud agar to isolate fungi present in the effluent. The plates were incubated for 72 hours at 30°C. Colonies with different macroscopic characteristics were selected and serial incubations to ensure purity. Nineteen bacterial colonies were isolated, differentiated by their macroscopic characteristics, such as edges, pigments, texture, and elevation, as well as their microscopic characteristics, such as Gram staining (+/-). Additionally, 32 fungal colonies were isolated, differentiated by yeast and mold types. It is concluded that there is a wide variety of microorganisms, including

bacteria and fungi, that have adapted to the presence of contaminants from chemical effluents in the clinical analysis laboratory. The isolated microorganisms, which have adapted to these effluents, will undergo microbial resistance testing, and the most suitable ones will be selected for biodegradation, using the chemical contaminants present in the effluents as a nutrient source.

Palabras clave: environmental microbial isolation- clinical analysis laboratory- chemical effluents