

TITLE: QUANTITATIVE AND QUALITATIVE ANALYSIS OF CONTAMINANT BACTERIA FROM POTABLE AND PURIFIED WATERS USED IN A PHARMACEUTICAL INDUSTRY LOCATED IN RIO DE JANEIRO CITY

AUTHORS: GARCÊZ, P. R. B.; SANTOS, J. M. P.; FERREIRA, J.V.R.; CARDOSO, A.M.; VIEIRA, J. M. B. D.

INSTITUTION: FUNDAÇÃO CENTRO UNIVERSITÁRIO ESTADUAL DA ZONA OESTE - UEZO, RIO DE JANEIRO, RJ (AVENIDA MANUEL CALDEIRA DE ALVARENGA, 1203, CEP 23070-200, RIO DE JANEIRO - RJ, BRAZIL)

ABSTRACT:

Water is crucial to all living beings and is usually inhabited by various types of microorganisms. Occasionally parasitic and/or pathogenic organisms are found into it. Some of the microorganisms found in water can lead to biofilms formation, a biological system that allows their irreversible adhesion to surfaces. The pharmaceutical industry produces purified water from drinking water that runs through a combination of purification systems, this purified water is very important as it is an essential component in the production of pharmaceutical forms. Among water purification systems, reverse osmosis stands out, which is based on the separation of water and its contaminants through the passage of water through a semipermeable membrane in a high pressure system. However, the formation of biofilms in these membranes is common due to the deposition, adhesion and proliferation of microorganisms, causing costs to the industry. Among the microorganisms that can participate in the adhesion processes and generate problems of public health or economic order, the following stand out: *Pseudomonas*, *Micrococcus* SP e *Enterococcus faecium*. Thus, monitoring water quality is critical for the safety and efficacy of drugs, being also necessary to take exact measures against the contaminations in the system. This study aimed to analyze the microbiota of drinking and purified water from the water system of a pharmaceutical industry quantitatively and qualitatively. The water samples were collected from purified and potable water sampling points aseptically, then the samples were filtered using the membrane filtration technique and incubated in the R2A Agar and Cetrimide agar in a 35-37°C oven and after 5 counting of the colonies. The gram staining technique will identify whether the microorganism under study is gram positive or gram negative and then VITEK® 2 Compact will be used to perform the identifications. For the investigation and morphological characterization of the biofilms, preparation for transmission and scanning electron microscopy of materials that come in contact with the potable and purified water will be carried out. Our first results showed that the quantitative analysis of potable and purified water samples showed different types of colonies through the membrane filtration technique. It was noted that purified water showed a reduction in the number of colonies compared to potable water samples.

Keywords: Contaminant Microorganisms, Potable Water, Purified Water, Pharmaceutical Industry

Development Agency: FAPERJ