Title: **WINOGRADSKY COLUMN AS A STRATEGY FOR MICROBIAL COMMUNITIES STUDY FROM MARINE AND FRESHWATER ENVIRONMENTS**

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Summary:

Winogradsky column is widley used for microbial ecology studies and was employed to study microbial communities and assess the impact of the textile effluents in marine and freshwater environments. Soil and water samples were collected in Itaguaré, Bertioga, SP. The columns were prepared with the same nutrients (NPK, carbon and sulfur sources). Column Test received synthetic textile effluent (mixture of commercial dyes: yellow 0.1%, red 0.1% and blue 0.2%). Column without textile effluent was used as control. Incubation was carried out at room temperature, in the presence of indirect light. Visual observation was performed weekly for 2 months. Aerobic, microaerophile and anaerobic layers were processed: UFC count, isolation and characterization of axenic cultures (morphology, arrangement, response to Gram and O_2 requirement, using enzymatic activities of catalase and cytochrome oxidase) and isolation of microrganisms that degrade dyes. They were used six different culture media (total bacteria, coliforms, anaerobic bacteria and red photosynthetic bacteria). Incubation at 28ºC and 37°C in the presence and absence of O_2. The origin of the water and soil influence the formation of microbial communities. Prominent zonation was observed in freshwater columns, with extensive green and red zones, showing significant growth of phototrophics anaerobic bacteria. Addition of effluent inhibited the formation of microbial communities in both ecossistems. In the freshwater ecossistem, effluent prevented the development of aerobic phototrophic organisms, and formation of green water aerobic zone was not observed. In the marine ecossistem, aerobic zone developed brownish color. In marine test colunm, decolorization of the effluent was observed throughout the time of incubation. None microrganisms capable of degrading dyes and phototrophic bacteria were isolated. Sulfate-reducing bacteria was revealed by the black color developed in thioglycolate medium with ferrous sulfate. Several axenic cultures of bacteria, aerobic and anaerobic, were obtained, allowing microscopic observation and physiological characterization of them. The Winogradsky column proved to be an appropriated strategy for assessing the environmental impact of textile effluent in microbial ecossistems and for the study of microorganims that are difficult to be isolated by traditional methods.

Key-words: microbial communities, microbial ecology, textile effluents.
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