Title: COMPARATIVE ANALYSIS BETWEEN FUNGAL COUNTING AND THE PHYSICAL-CHEMICAL PARAMETERS: pH, CHLORIDE AND NITRATE OF WATER SAMPLES OF JAGUARI AND ATIBAIA RIVERS ,PAULÍNIA-SP (BRAZIL).

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Abstract:

One of the main challenges for science is gather reliable information which can guide the protection of water resources, especially in urban areas. The evaluation of water-quality and maintenance of information that may assist resource managers and policymakers at local levels is the base for making correct decisions for remediation. The Campinas industrial park is huge and one of the most populated places in Brazil, after São Paulo. Jaguari (JR) and Atibaia (AR) are rivers located in São Paulo state (Brazil). Great urban centers like Campinas, Paulínia and Americana use water from AR. The aim of this study was to determinate the number of Colony Forming Units (CFU) of filamentous fungi (FF) and yeasts (Y) of water samples from AR and JR and to compare the following physical-chemical parameters: pH, chlorides (Cl^-) and nitrates (NO_3^-). Forty-seven samples were collected in 3 places: 1- Jaguari River, 4- Atibaia River upstream, 5- Atibaia River downstream 200m, between 2012 and 2014. Fungi and yeasts were assessed by spreading plate technique using Potato Dextrose Agar (PDA) for FF and Sabourad Agar (SA) for Y, incubated for 7 days at 25ºC. The parameter pH was measured using potenciometer; Cl^- and NO_3^- were obtained using colorimetric analysis. For statistical analysis, nonparametric tests were used: Kruskal-Wallis (ANOVA) and multiple regression at significance level of 95% ($p<0,05$). A comparative analysis with data among three points was done, between dry and rainy seasons and the parameters: FF UFC, Y UFC, pH, Cl^- and NO_3^-. There was significant difference only for Cl^- ($p=0,024$). The Cl^- mean values in rainy season were 171,04±242 $mg.L^{-1}$ (median 10,87 $mg.L^{-1}$), in dry season 153,03±214,4 $mg.L^{-1}$ (median 13,84 $mg.L^{-1}$). These data were highly variable, however to observe the median there is a tendency to increase in this parameter in dry season. To adjust biotic and abiotic parameters by multiple regression analysis it was observed that the combination of studied physical-chemical parameters influenced in 16,3% and 6,7%, for Y and FF, respectively, demonstrating a low level of influence, in accordance with data previously obtained. The analyses indicated that the parameters studied did not influence the number of FF UFC or Y UFC, despite the samples come from different environments that are exposed currently to different anthropogenic intensities, since that Jaguari River is considered the river less exposed to urban activities that Atibaia river.

Keywords: chloride, filamentous fungi, nitrate, pH, river, water samples, yeasts.

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