TITLE: BIOSAFETY: FUNGAL ASSESSMENT IN DENTAL UNIT WATER

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ABSTRACT:

The biofilm in dental unit waterlines and reservoirs is a major cause of a high number of microorganisms in water caused by a low level of microbial contamination in the water supply. The aim of this research was to evaluate the fungal load in dental unit water after the implementation of a Standard Operating Procedure (SOP) for improving the microbial quality of dental unit water. Water samples were collected from a dental clinic of School of Dentistry of Ribeirão Preto - USP, 39 dental units (air-water syringes, high-speed handpieces and reservoirs) and taps. Water samples were homogenized, submitted to decimal dilutions (up to 10^{-6}), aliquots of each sample (1mL) were seeded on Petrifilm™ YM (3M, St Paul, MN, USA) system, and incubated at 23ºC for 5 days. After the incubation period, the results of the plates were read by stereomicroscope (Nikon, Japan) under reflected light and the numbers of colony forming units of fungi were expressed per milliliter of water *in natura* (CFU/mL). The data collected were submitted to the appropriate codification, validation by double typing, export to the BioEstat program (version 5.3), and statistical analysis (Kruskall-Wallis and Student-Newman-Keuls tests) using level of significance α=5%. The fungal contamination load in water samples from high-speed handpieces was higher than taps (p=0,0001), reservoirs (p=0,0001) and air-water syringes (p=0,0005). Besides, water samples were contaminated with fungi from 11 (28.2%) taps, 17 (43.6%) reservoirs, 18 (46.2%) air-water syringes and 31 (79.5%) high-speed handpieces. The implementation of SOP for improving the microbial quality of dental unit water did not completely eliminated the fungal contamination. Therefore, the biofilm on dental unit waterlines remains the major challenge to achieve the biosafety in the dental environment.

Keywords: biofilms, dental clinics, dental unit waterline, water, water pollution.

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