

TITLE: POLYESTER CLOTHS FOR MAKING WHITE COATS: DO THEY PROTECT US?

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ABSTRACT:

White coats can present microbial contamination, but there is no consensus relating its usage to reduction of professional exposure to microorganisms. The objective of this study was to evaluate *in vitro* polyester cloths (Oxford and microfiber) used for making white coats, regarding its function as physical barrier to fluid and bacteria. In the first stage, fluid passage times through the pieces of cloths were measured and registered in seconds. In the second stage (microbiological), standardized inocula of standard bacteria of *Staphylococcus aureus* (ATCC 25923) and *Pseudomonas aeruginosa* (ATCC 27853) were added to the fluid. After the fluid passage through the pieces of cloths, aliquots were seeded on Petri dishes with selective culture mediums, incubated at 37°C for 24h and the number of colony-forming units expressed per milliliter of fluid (CFU/mL). In the third stage, structural characteristics of cloths and bacterial retention were analyzed through scanning electron microscopy (SEM). The obtained data were submitted to normality tests (Kolmogorov–Smirnov and Shapiro–Wilk) and, later, to Mann–Whitney *U* test with $\alpha=5\%$ significance level. When comparing medians of fluid passage times obtained for Oxford cloth with the microfiber one, statistical difference ($p<0.001$) was identified, independent of the involved variables. In the second stage, there was no difference between the cloths in reduction of fluid bacterial load after the passage through the cloths for both *S. aureus* ($p=0.056$) and *P. aeruginosa* ($p=0.320$). The analyses by SEM allowed evidence structural differences between the cloths, that can interfere in fluid passage time through the cloth. However, presence of microorganisms was not noticed. In conclusion, before the two types of cloths used for making white coats, the microfiber one presented longer fluid passage time compared to the Oxford one, due to the structural differences of these cloths. However, the functionality as bacterial physical barrier after fluid passage through the pieces of cloths were not observed, which reinforces the need to replace the white coat when it comes in contact with biological fluids, aiming at biosafety: contamination/infection control in health field.

Keywords: white coat, cross-infection, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, biosafety.

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