

MICROBIAL BARRIER PERFORMANCE EVALUATION IN SURGICAL APRONS SMS X 100% COTTON FABRIC



Matielo EVC.¹, Souza ZF.², Silveira MJ³

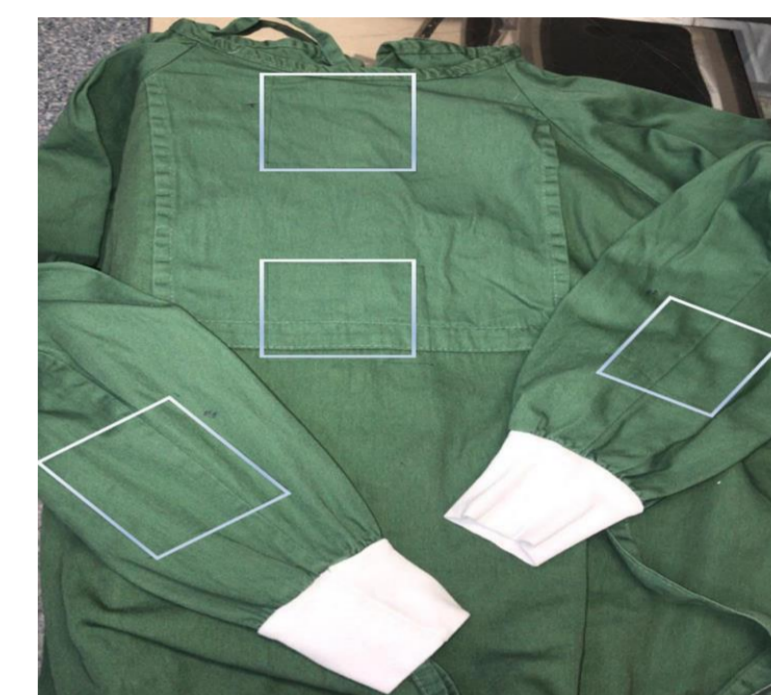
¹Public Hospital, SPDM – São Paulo, Brazil.

²Hospital Ipiranga – UGA II - São Paulo, Brazil.

³Controlbio Microbiology Laboratory - São Paulo, Brazil.

ABSTRACT: Preventing microbial contamination of the surgical wound is the main function of the surgical apron, as well as the protection of medical staff. Made with 100% cotton fabric in some countries such as Brazil, its use still generates controversies regarding the barrier efficiency against microorganisms. Therefore, our objective was to compare the performance of new and used surgical aprons made of 100% cotton fabric versus medical grade SMS disposable surgical aprons when submitted to bacterial filtration testing.

METHOD: In this comparative study, we used 10 SMS aprons, 10 new 100% cotton fabric and 10 used several times 100% cotton fabric aprons. We cut 4 samples of 10 cm² from all aprons, from the areas: inner face of the forearm, thorax and abdomen, totaling 120 samples. All were submitted to a Bacterial Filtration Efficiency Test according to ABNT NBR 14873. The tests were performed in a laminar flow hood in an accredited microbiology laboratory. The aprons were also tested in a humid environment, simulating intraoperative reality.



RESULT

APRON	<i>Bacterial Filtration Efficiency (DRY)</i>	<i>Bacterial Filtration Efficiency (HUMID)</i>
SMS	97,30%	97,30%
NEW COTTON FABRIC	80,8%	54,5%
USED COTTON FABRIC	72,7%	35%

CONCLUSION: The different performance between SMS and cotton fabric aprons has been proven, and the non-compliance of new and used fabric aprons has been demonstrated in all tests. All SMS apron manufacturers should present reports for commercialization of its products. On the contrary, it is not requested from the cotton fabric manufacturers, pathogen barrier efficiency report. According to the obtained results on this evaluation such report cannot be issued. Hospital managers are responsible for the cost-benefit analysis of materials and their purchase, with the duty to decide on the safe performance product and in compliance with current standards and laws. Studies carried out in several countries demonstrate the amounts spent on hospital infection outweigh the investment in proven performances and quality materials. We consider the results obtained as definitive to support the decision to replace cotton fabric aprons in the surgical environment due to the risk it poses to patients for disposable SMS aprons. Scientific evidence base this statement, distancing us from dangerous empiricism and elucidating long-term doubts about the cotton fabric reliability and use in surgical dressing components.