

EVALUATION OF MICROBIAL CONTAMINATION IN USED MAKEUP FOUNDATION PRODUCTS AND ASSOCIATED APPLICATORS

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Nowadays, cosmetic products such as liquid and compact powder foundations play an important role in appearance and confidence improvement. Applicators maintaining direct contact with both the skin and the foundation products can transfer microorganisms, leading to bacterial colonization and cross-contamination [1]. In addition, the components contained in cosmetic products create favorable conditions for the growth and reproduction of bacteria and fungi [2]. Microbial contamination can lead to adverse skin reactions, particularly due to the presence of pathogenic bacteria, causing detrimental health effects in consumers [3]. According to previous investigations, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Escherichia coli*, and different strains of *Bacillus* are the most common contaminants of makeup foundation products [4].

The aim of this study was to evaluate microbial contamination in used liquid and compact powder foundations, including their applicators. A total of 30 cosmetic samples were collected for analysis, equally divided into three categories: 10 compact powders, 10 liquid foundations and 10 makeup applicators. Inclusion criteria required all formulations to be within the manufacturer-specified expiration period (12–24 months). Furthermore, applicators were analyzed without prior cleaning following their most recent use. Collected samples were enriched in Eugon broth and inoculated onto selective nutrient media.

In 10 samples of compact powders, *Bacillus* spp. were identified in 100% of samples, *S. aureus* was identified in 10%, followed by coagulase-negative *Staphylococcus* spp. in 80% of samples. In 10 liquid foundations, *Bacillus* spp. were detected in 70%, while coagulase-negative *Staphylococcus* spp. were identified in 60% of samples. Lastly, in 10 samples of makeup applicators, *Bacillus* spp. were found in 100%, *S. aureus* in 10%, and coagulase-negative *Staphylococcus* spp. 90% of samples.

Results demonstrate that the bacteria species found in cosmetic products are *Bacillus* spp. and *Staphylococcus* spp. (including *S. aureus*) which may pose potential health risks to users. It is essential for manufacturers to strictly follow Good Manufacturing Practice (GMP) guidelines. Consumers should consider proper storage conditions of cosmetic products, avoid sharing them with others and observe the manufacturer's stated expiration dates in order to reduce microbial contamination.

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