

ISOLATION OF SOME PATHOGENIC BACTERIA FROM STUDENTS' MAKEUP AS A PART OF BIOSAFETY IN THE MEDICAL LABORATORIES

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ABSTRACT : The bacterial contamination of lipsticks and face cream may become a great important matter in the medical laboratories. The present study was designed to determine the types of bacterial contamination in the face cream and lipsticks of undergraduate students. Also, the study aimed to determine the sensitivity of the isolated bacteria against many antibacterial agents. The study included 190 swabs samples from 190 face cream and lipsticks samples of the females' students from five departments in the Medical Technology Institute, Almansour, Middle Technical University were collected in February 2018. The swab samples were collected with sterile condition and cultured on enriched Blood agar and MacConkey agar. Serial dilutions were made up to 10^{-6} to enumerate the suspected present bacteria in the samples. The identification of isolated bacteria was confirmed by using culture media, Gram stain and biochemical tests. The sensitivity test of the isolated bacteria to different antibiotics was examined according to Bauer - Kirby disc diffusion method. 100 (52.63%) samples were positive; 100 isolates of bacteria were isolated from makeup. Also, the percentage of bacterial isolates isolated from the face cream samples were more than the lipsticks (85% vs. 15%, respectively). The most frequent bacterial isolates were *Staphylococcus aureus* (66.66% from lipstick swabs and 47.05% from the face cream) followed by *Staphylococcus epidermidis* (13.33 from the lipstick and 23.52% from the face cream). Also, *Escherichia coli* was isolated and the percentage of *E. coli* was 13.33% and 11.76%, for the lipstick and the face cream, respectively. *Pseudomonas aeruginosa* showed a high resistance to the antibiotics. Whereas, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Escherichia coli*, *Streptococcus pyogenes*, *Bacillus subtilis*, *Micrococcus* spp. and *Proteus mirabilis* were susceptible to Cephalothin and Ciprofloxacin, while it resistant to Amikacin, Cefazolin and Cefotaxime. The bacterial counts in the makeup were higher than the bacterial limits standards. The lipstick and face cream were relatively contaminated with Gram-positive and Gram-negative bacteria more than the standard limit, these contaminated accessories lead to distribute the pathogenic bacteria among the students causing several diseases.

Key words : Lipsticks, face cream, *Staphylococcus aureus*, *Bacillus*, *Micrococcus*, *Streptococcus* spp., biosafety.

INTRODUCTION

Cosmetics products are widely used in the entire world. Most of them contain different ingredients that are considered a good medium for pathogenic bacterial and fungal growth (Hashim *et al.*, 2009). The worth from using cosmetic products, storage in non-refrigerated conditions and manufacturing from bad materials led to encouraging the microbial growth during cosmetic manufacturing (Siegert *et al.*, 2005). One of the most important biological laboratories safety rules is not applying makeup or any type of cosmetics to the face or hands during working in

the biological laboratories (Naki *et al.*, 2006).

In India, a previous study referred to the contamination of cosmetic samples (aqueous and solid creams) with the pathogenic bacteria. All the cosmetic products were contaminated with *Staphylococcus aureus*, *Escherichia coli* and *Enterobacter* species (Garami *et al.*, 2016). The presence of water, natural extracts from animals or plants like Fatty acids, oils, waxes, and proteins that enhance the pathogenic and non-pathogenic bacterial and fungal growth in these cosmetic products (Orus and Leranoz, 2005), lead categorizing the