

Microbiology of Used Lipstick Products

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Abstract:- Lipsticks are cosmetics for the lips. Some lipsticks, when applied on the lips cause skin reaction like peeling of lips and few black spots discolorations. These indicate that such lipsticks could be contaminated by some organisms which could be pathogenic. Used lipsticks samples were collected from students in Stella Okolie Female Hostel, Nnamdi Azikiwe University, Awka, Nigeria and microbiological analysis conducted on them. . The samples were dissolved with Tween 20 and diluted using Nutrient broth. Appropriate dilutions were plated on appropriate growth media. The bacterial isolates obtained include *Klebsiella* sp, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Morganella* sp and *Bacillus* sp. As these organisms are of public health concern, there is need for creating awareness and educating the populace on the dangers inherent in sharing lipsticks.

Keywords:- Cosmetic, Contamination, Tween 20.

I. INTRODUCTION

Lipsticks fall under the face-care cosmetics category and are composed of waxes, oils, emollients, emulsifiers, pigments/colourant and binders in varying concentrations which determines the characteristics of the final product [1]. Lipsticks when designed to remain on the lips for a prolonged period are composed of high percentage of wax and pigment concentration along with low concentration of oils. On the other hand, lipsticks designed for smooth creamy feel have a low concentration of wax and high concentration of oils [1]. A cosmetic product including lipsticks need not to be sterile [2], however there should be absence of *Staphylococcus aureus* and gram negative organisms [3]. The lipsticks should remain in this state until used by consumers [2]. The composition of the lipsticks together with the warm and humid climatic conditions support as well as encourage the survival and growth of many microorganisms. This potentially leads to bio-deterioration of the product and as well increase the risk of infection to the users [4]. Lipsticks are used in contact with human skin thereby, easily being contaminated with the normal flora as well as those that may be carried from drinks or any other edible sources consumed by the individual using the cosmetics. The moment lipsticks is opened, the chances of contamination due to air flora and this fluid goes on increasing with the use until the product is discarded by the consumer [5].

This research work is aimed at studying the microorganisms capable of contaminating used lipsticks.

II. MATERIALS AND METHODS

A. Sample Selection and Processing

Ten used lipsticks samples were collected from students in Stella Okolie Female Hostel, Nnamdi Azikiwe University, Awka, Nigeria. The samples were transported to the Applied Microbiology and Brewing Department of the institution where they were analyzed. They were prepared according to the method of Onurdurg [6]. 0.1g of lipstick sample was homogenized in 2ml of Tween 20 and used for further analysis

B. Isolation and Identification of Bacteria

Sterile Nutrient broth was added to the homogenized lipstick emulsion to make up the volume to 10ml. A sterile wire loop was dipped into the mixture in the test tube after gentle shaking and streaked on sterile Nutrient agar (NA), Salmonella Shigella agar, Mannitol salt agar, MacConkey agar, Eosin methylene blue, Sabouraud Dextrose agar in sterile Petri dishes. They were incubated at 37°C and 25°C in an inverted position for 24hours and 48-72hours for bacterial and fungal isolates respectively [6]. Developed colonies were subcultured to obtain pure colonies which were subsequently stored at 4°C on agar slants for further studies. The identification of bacteria was based on their Gram reaction and biochemical tests.

III. RESULTS AND DISCUSSION

Five bacterial isolates were obtained from the used lipstick samples studied. These include *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Bacillus* sp, *Klebsiella* sp and *Morganella* sp.

Staphylococcus aureus is a normal flora and contamination can occur due to poor handling of the lipstick and its container. The organism can lurk on old makeup and cause an infection, such as dermatitis with initial signs of infection which include redness, inflammation and heat over the infected area. Khanom, *et al.*, [7] also reported same organism. *Staphylococcus epidermidis* is though a normal flora too can cause infection in immunocompromised individuals.

Bacillus spp was also present in the samples because they might have being exposed to environment contaminated with *Bacillus* spores. This according to Pruss *et al.*, [8] can lead to skin diseases.

Klebsiella spp was also isolated in our study. This if accidentally ingested could lead to urinary tract infection.

Morganella sp can contaminate lipstick via the environment. These organisms also exist as normal flora in the intestine of human and are infrequent causes of disease in healthy individuals.

Since these organisms are of public health importance, there is need for awareness creation to lipstick users to limit sharing of these products with others as it could act as a vehicle for disease transmission.

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