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ANTI-MICROBIAL ACTIVITY OF SYNTHETIC SOAPS ON NORMAL FLORA OF HUMAN BODY

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ABSTRACT

Human skin normally harbours a variety of microorganisms collectively known as normal flora. These microorganisms may become pathogenic under favourable conditions, making personal hygiene essential for preventing infections. The present study evaluated the anti-microbial activity of four commonly used synthetic soaps — Medimix, Dettol, Lifebuoy, and Santoor — against the normal flora of the human body using the agar diffusion method. Soap solutions were tested on nutrient agar plates inoculated with skin microflora, and zones of inhibition were observed after incubation. Among the tested soaps, Dettol showed the highest antimicrobial activity followed by Lifebuoy, Medimix, and Santoor. The results indicate that antibacterial soaps differ in their effectiveness against human skin flora.

KEYWORDS

Antimicrobial activity, Synthetic soaps, Normal flora, Agar diffusion method, Skin microorganisms, Personal hygiene

INTRODUCTION

The human body is naturally colonized by microorganisms such as bacteria and fungi, collectively referred to as normal flora. These microorganisms are commonly found on the skin, mouth, and other body surfaces. Although many normal flora organisms are harmless, some may cause infections when hygiene is poor or immunity is weakened.

The importance of hand hygiene in controlling microbial transmission was first emphasized by Ignaz Semmelweis in 1847, who demonstrated that proper hand washing significantly reduced infections in hospitals. Later, Louis Pasteur (1861) established the germ theory of disease, proving that microorganisms are responsible for infections. In 1884, Robert Koch introduced methods for isolating bacteria and studying microbial pathogens.

Soap plays an important role in maintaining personal hygiene by removing dirt, oil, and microorganisms from the skin surface. Synthetic soaps containing antimicrobial compounds are widely used to reduce microbial load and prevent disease transmission.

Several studies have shown that antibacterial soaps reduce microbial contamination more effectively than ordinary soaps. According to Larson (1999), antimicrobial soaps can significantly decrease transient microbial flora on human skin. Aiello et al. (2007) also reported that soaps containing antibacterial agents are useful in minimizing microbial transmission in community settings.

Different commercial soaps contain different active ingredients such as triclocarban, chloroxylenol, herbal extracts, and essential oils that influence their antimicrobial efficiency. Therefore, evaluating the antimicrobial activity of commonly used soaps is important to understand their effectiveness against human-associated microorganisms.

The present study was conducted to compare the antimicrobial activity of Medimix, Dettol, Lifebuoy, and Santoor soaps against normal flora isolated from the human body.

METHODOLOGY

Sample Collection

Normal flora samples were collected from the skin surface of healthy individuals using sterile cotton swabs.

Preparation of Soap Solutions

Each soap was dissolved separately in sterile distilled water to prepare soap solutions of equal concentration.

Figure 1: Soap solutions prepared from Santoor, Lifebuoy, Dettol, Medimix.

Inoculation Procedure

The collected skin flora samples were spread uniformly over sterile nutrient agar plates using a sterile swab.

Disc Diffusion Method

Sterile paper discs soaked in different soap solutions were placed on the inoculated agar surface and labeled accordingly:

Medimix, Dettol, Lifebuoy, Santoor

Incubation

The plates were incubated at 37°C for 24 hours.

Observation

After incubation, antimicrobial activity was determined by observing the zone of inhibition around each soap disc.

RESULTS

The antimicrobial activity of different soaps was observed by measuring the clear zone around the discs where bacterial growth was inhibited.

Table 1: Observed Anti-Microbial activity of Synthetic soaps

Soap sample	Observation	Relative antimicrobial Activity
Dettol	Largest zone of inhibition observed	Highest
Medimix	Moderate zone of inhibition observed	High
Lifebuoy	Small zone of inhibition observed	Moderate
Santoor	Least zone of inhibition observed	Low

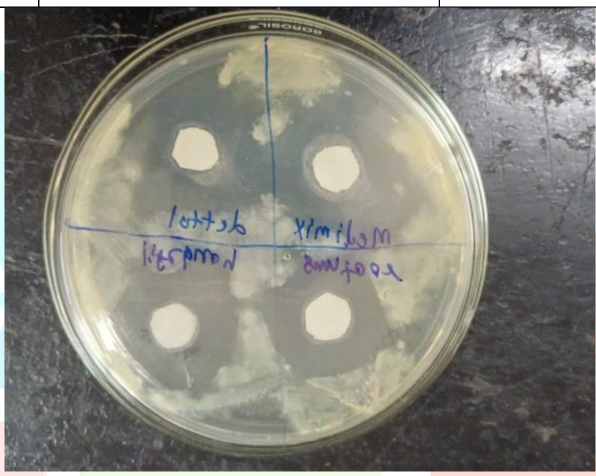

Figure 2: Anti-Microbial activity of Different soaps

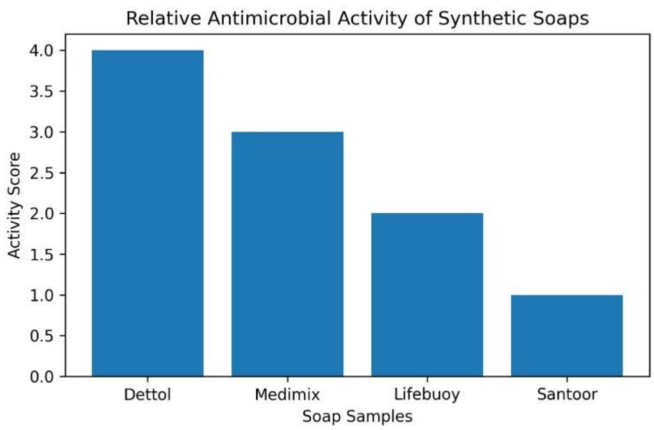

Figure 3: Relative Antimicrobial Activity of Synthetic soaps

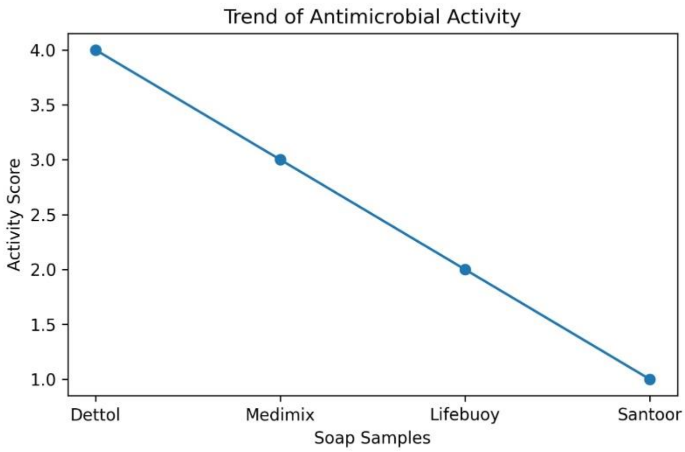

Figure 4 : Trend of Antimicrobial Activity

The agar plate demonstrated visible inhibition zones surrounding the soap discs, indicating the suppression of microbial growth by the soap samples.

Dettol soap exhibited the maximum antimicrobial activity against normal human flora. Medimix also showed considerable inhibition of bacterial growth. Lifebuoy demonstrated moderate activity, while Santoor showed comparatively lower antimicrobial effectiveness.

DISSCUSSION

The present study revealed that different synthetic soaps possess varying degrees of antimicrobial activity against normal flora of the human body. The differences observed may be due to the presence and concentration of active antimicrobial ingredients in the soaps.

Dettol soap showed the highest antimicrobial activity, likely due to the presence of chloroxylenol, a well-known antiseptic agent effective against a wide range of microorganisms.Medimix also demonstrated significant activity because of its antibacterial formulation.

Lifebuoy showed moderate inhibition, possibly due to its herbal composition, which may provide mild antimicrobial effects. Santoor displayed the least activity, indicating that cosmetic soaps may focus more on cleansing and fragrance rather than antimicrobial effectiveness.

The study confirms that antibacterial soaps are more effective in reducing microbial load compared to ordinary cosmetic soaps.

CONCLUSION

The present study clearly demonstrates that synthetic soaps differ in their antimicrobial effectiveness against the normal flora of the human body. Among the soaps tested, Dettol exhibited the highest antimicrobial activity, followed byMedimix, Lifebuoy, and Santoor. The larger inhibition zones observed around Dettol and Medimix indicate the presence of stronger antibacterial agents capable of suppressing microbial growth more effectively. Lifebuoy showed moderate antimicrobial action, whereas Santoor displayed comparatively lower activity. These findings suggest that antibacterial soaps can play an important role in reducing microbial contamination and maintaining personal hygiene. Regular use of effective antimicrobial soaps may help minimize the transmission of potentially harmful microorganisms and contribute to better public health practices.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest

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