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Antimicrobial Activity of Diverse Hand Wash

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Abstract: *Hand washing with hand wash is one of the most common practice practiced throughout every household in a daily bases. Exposure to different surfaces and environments makes our hands susceptible to different organisms. These organisms may be pathogenic and dangerous to our health if it enters our body through physical actions like eating food using our hands or touching our faces. Effects of the hand wash on selected common potentially pathogenic bacteria E.coli (gram negative) &Klebshellaspp(gram positive) were evaluated using disc diffusion method. So these two species of bacteria were used to test the anti-microbial property of two very common household hand wash I.e. Dettol &Santoor. Serial dilutions of each hand wash were used to check their anti-microbial strength at different concentrations. Fresh samples of E.coli and Klebsiella sp. were swabbed on two MIC plates each.*

Keywords: Hand wash, Handwashing, *E.coli*, *Klebsiella sp.*, Antimicrobial property, Effectiveness, Dettol, Santoor

I. INTRODUCTION

Hand perform many functions in our daily life & are exposed to variety of substances like dust, different bodily fluids, contaminated materials, raw substances and various stuff from environment and during personal hygiene. Washing our hands with liquid hand washes stops the spread of microbes or loose transient flora thus preventing infections. But after washing our hands there remains a layer on our skin which protects our normal flora of hands ensuing low rate of different nosocomial infections. In early years people used to have soap to wash their hands. But these soap bars have residues of past usage and dirt on them. So now liquid hand washes are used instead of bar soap to reduce the cross contamination. Most of hand microbes can be killed using hand sanitizers but soiled or tainted hands with muck or organic material must always be washed with liquid hand wash.

Studies have revealed that liquid soaps are more effective than plain soaps as they contain antimicrobial active ingredients which remove more bacteria away. Studies suggest that using plain soap increases the spread of pathogenic bacteria to food by 3 times than using liquid antimicrobial hand wash. Comparing hand washes with alcohol-based solutions and washing with antimicrobial for a median time of 30 seconds, each one showed that the alcohol-based hand washes reduced bacterial contamination 26% more than the antibacterial. The results of a clinical trial with HIV patients found that 100% of itching symptoms are decreased by using liquid hand wash. So all the Indian branded liquid hand wash like Dettol, Lux, Johnson & Johnson, Lifebuoy &Santoor have the ability to remove 65% to 85% of microbial population that are present or get settled on human skin.

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II. MATERIALS AND METHOD

Liquid hand wash:
For this research two household liquid hand washes were utilized.
They were Dettol liquid hand wash &Santoorliquid hand wash.

2.1 Preparation of Serial Dilution:

About 10 ml of undiluted sample in taken of dettol liquid hand wash. Then 1 ml of this undiluted solution is then transferred to another test tub containing 9 ml of distilled water forming a 10 ml solution of diluted liquid hand wash with hand wash to water ratio of 1:9 respectively. It creates 10^{-1} dilution of that hand wash. Then repeat the same process again & again to get 10^{-2}, 10^{-3} & 10^{-4} dilutions. Repeat the same process with Santoor liquid hand wash.

Bacterial Samples: Fresh samples of *Escherichia coli (E.coli)&Klebsiella sp.* were used in this research which was obtained from the laboratory of the Microbiology department.

Media: Sterile Mueller-Hilton Agar:

Plates of sterile Mueller-Hilton agar were used for the detection of antibiotic susceptibility by MIC & MBC. Due to its low sulfoamide concentration most pathogenic organisms grow perfectly in this medium.

Components	Amount
Beef Extract	2.00gm
Starch	1.50gm
Acid Hydrolysate of Casein	17.50gm
Agar	17.00gm
Distilled Water	1000ml

Miscellaneous:

1. Test tubes (x8)
2. Sterile Petri Plates (x2)
3. Sterile Cotton Swabs (x2)
4. Sterile Antimicrobial Discs
5. Sterile 10ml pipettes (x2)

Antimicrobial Activity of Liquid Hand Wash

Firstly, take two test tubes and add 10ml of liquid Dettol hand wash in one and 10ml of Santoor hand wash in other. By using water as a diluent a series of dilutions is made ranging from 10^{-1} to 10^{-3} of each liquid hand wash. Sterile Mueller-Hinton agar was made in the lab and aseptically transferred into 4 sterile petri plates. These plates are later allowed to cool & solidify at room temperature.

After solidifying, the Mueller–Hinton agar plates were swabbed with strains *Escherichia coli* and other two with *Klebsiella sp.* respectively. After that, aseptically dip different sterile discs in different test tubes containing different dilutions of dettol hand wash respectively and transfer the disc in different quadrants of the petri plate containing *E-coli* in one and *Klebsiella sp*. Do the same

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with santoor hand wash. The plates are then transfered to an incubator and place it in and incubate it at 37^0C for 24 hours.

III. RESULTS

The main motive of this research on these household handwash was to determine the antibacterial activity in Dettol and Santoor hand washes. Larger zones of inhibitions were noticed at higher concentration and it keeps on decreasing as the concentration decreases.

The undiluted sample of dettol showed 12mm zone in *Escherichia coli*& 10mm zone in *Klebsiella*whereas Santoor showed 16mm zone & 10nm zone on *Escherichia coli &Klebsiella sp.* respectively.

10^{-1},10^{-2} & 10^{-3} dilutions of Dettol got 10mm, 4mm & 2mm zones in *E.coli* whereas it got 9mm, 4mm & 3mm zones in Klebsiella respectively. In Santoor, 14mm, 11mm & 7mm zones in E.coli and 5mm, 3mm & 2mm zones in Klebsiella are found for 10^{-1},10^{-2} & 10^{-3} dilutions respectively.

	Samples	Zone of inhibition in diameters	
Dettol	Dilutions	*Escherichia coli*	*Klebsiellaspp*
Hand	U.D	12nm	10nm
Wash	10^{-1}	10nm	9nm
	10^{-2}	4nm	4nm
	10^{-3}	2nm	3nm

Table 1 : Antimicrobial Activity of Dettol.Hand Wash

	Samples	Zone of inhibition in diameters	
Santoor	Dilutions	Escherichia coli	Klebsiellaspp
Hand	U.D	16nm	12nm
Wash	10^{-1}	14nm	5nm
	10^{-2}	11nm	3nm
	10^{-3}	7nm	2nm

Table 2 : Antimicrobial Activity Of Santoor Hand Wash

IV. DISCUSSION

The main objective of this study is to analyze and confirm the reliability and to know the antimicrobial properties of the liquid hand washes that are commonly used by many individuals at different places. As these hand washes contain disinfectants such as isopropyl alcohol which has bactericidal properties in it. Most of the hand washing can be usual done by hand sanitizers but it is found out that utilization of hand wash on murky and soiled hands is far more effective than sanitizers.

V. CONCLUSION

The hand washes has shown antimicrobial properties against tested organisms. Santoor hand wash showed more antimicrobial activity than the dettol ones. So use of liquid hand wash should be mandatory in every household and is very important in hospitals and healthcare fields to reduce the amount of cross contamination. This paper shows that common house hold hand washes are enough

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to exterminate the common pathogenic bacteria on our hands & shows that the amount of microorganisms on our hand after hand wash is reduced with the microbial eradication rate of 70%. So it's safe to say that hand washing with liquid hand wash is safe. As it contains low amount of alcohol which does not have any side effects, it can be also utilized by or on children's hands to kill the bacteria on them. Further study and research is required to increase the efficiency and usability of hand washes to get better alternatives.

REFERENCES

[1]. Antibacterial Activity of Liquid Hand Washes Against Daily Encounter Bacteria February 2014IOSR Journal of Pharmacy (IOSRPHR) 4(2):19 – 24 DOI:10.9790/3013-040201019-23

[2]. Antibacterial activity of liquid hand washing soaps and hand sanitizers Antibacterial activity of liquid hand washing soaps and hand produced with selected herbal extracts.pdf April 2020

[3]. Blessing Nwachukwu, Atoyebi James Toyosi Hand wash provides protection