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Research Article

EFFICIENCY OF LIQUID HANDWASHES ON MICROBIAL FLORA OF HANDS

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ABSTRACT

Hand hygiene can be observed by washing hands with soap and water or using liquid hand washes after doing every activity which in turn leads to unhygienic hands. Various studies have divulge that liquid soaps consist of active antimicrobial ingredients condemn more bacteria as contrast to plain soap. Liquid based hand washes are proved to be more effective than alcohol-based hand rubs mainly for reducing *H1N1 influenza A virus* and *Clostridium difficile* spores from hands. The objective of the present study was to scrutinize the efficiency of medicated, ayurvedic and fragrant handwashes on microbial flora of hands and to find out which among the three gives the best result. There was no remarkable difference in log reduction of different handwashes. Medicated handwash is more effective than fragrant and ayurvedic handwash. With the pace of time, medicated handwash showed considerable less decrease in efficiency than ayurvedic and fragrant handwash. The present study provides practical information that may be beneficial in all fields of medical, hospitals, social.

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INTRODUCTION

Hands are the prime tool in our everyday life. They are the primary mode of transmission of infection as they are open to a lot of substances which encompasses of dirt, touching hands during personal hygiene. Hands execute variety of functions of the human body and thus are open to diverse substances that cause various diseases including intestinal infections, SARS, Hepatitis A, Skin infections, food borne infection because of leading cause Norovirus and many more. (Sajed *et al.*, 2014, Shah *et al.*, 2014, Cannon *et al.*, 2012) Hand washing is the execution of cleaning one's hand with or without the use of water or another liquid or with the use of soap for purpose of removing soil, dirt and micro-organisms. Medical hand hygiene prevails to the hygiene practices related to administration of medicine and medical care that either prevents or minimizes disease and the spreading of it. The prime pretension of hand washing is to make hands free of pathogens and chemicals which otherwise can cause various diseases. For infection control, proper and frequent hand washing is must. (Carita *et al.*, 2012) It is estimated that simple hand washing and maintaining hand hygiene leads to reduction in rate of infectious diseases and thus could save one million lives per year. (Montville *et al.*, 2002) Prevention of cross transmission of micro-organisms leading to nosocomial infections could be done by giving emphasis on hand washing. (Larson *et al.*, 2005)

Now-a-days nosocomial infections are taking foot-hold. Among assorted reasons for such infections, handwashing is not untouched. Improper hand washing engenders various infections related to gastrointestinal tract and the biggest surface of our body; skin. Proper hand washing is one of the easy ways to get rid of or restraining the mediation of such infections at least for appreciable time. Being a rock-bottom method, hand washing with soap and water has been used since Coon's age. (Kim *et al.*, 2015) Yet, to out caste the old tradition of soaps, on the double; liquid hand washes are used over bar soaps to avoid wastage of soap and the important reason being hygiene.

MATERIALS AND METHODS

This study was conducted in Microbiology Laboratory, Department of Microbiology, R.K.Talreja College, Maharashtra, India.

Types of hand washes used

The liquid hand wash sample of three different categories, comprising of Medicated, Fragrant and Ayurvedic used for the study were purchased from standard cosmetics, pharmacy stores and market malls. The expiry dates, batch numbers and if or not the manufacturers seal is present was noted.

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Determination of log reduction of microbial flora of hands by using hand washes

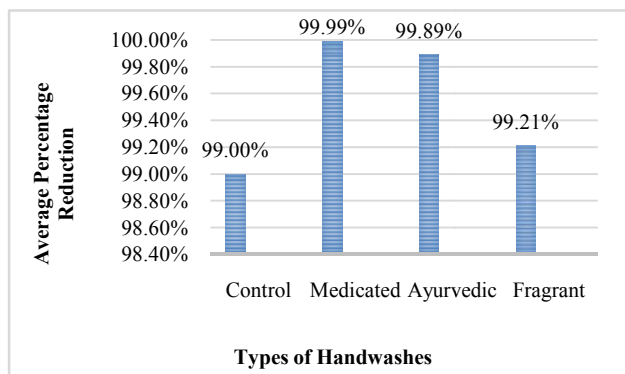
To determine the log reduction in the microbial flora of hands, the volunteers were subjected to hand washing. Hand washing with plain water and then saline was taken as control. Whereas for test sample, the volunteers were subjected to handwashing with selected liquid handwashes followed by saline. This saline wash was collected and viable count was performed; plates were incubated at 37°C for 24 hours.

To check the efficiency on storage of hand wash: To check if the experimental handwash sustain the storage time after its opening, the volunteers were subjected to both hand washes; freshly opened and opened 3 months ago. The Saline wash samples from the hands of the volunteers were collected and viable count was performed. The plates were incubated at 37°C for 24 hours. The log reduction was calculated.

RESULTS AND DISCUSSION

Types of hand washes selected

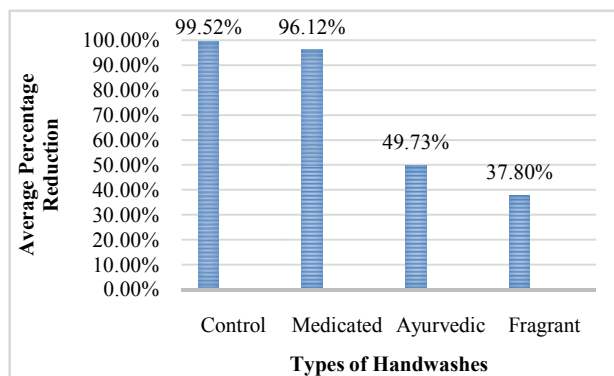
Different hand washes were selected as per the popularity in the society. Batch number, Expiry date, manufacturing date and manufacturer’s seal was noted. Medicated handwash selected contains, 4.8% Chloroxynol. Ayurvedic contains, *Azadirachtaindica* and *Ocimum sanctum*. Fragrant handwash had essential oils as their prime ingredient.



Graph 1 Average percentage reduction of microbial flora of hands

Percentage reduction of microbial flora of hands by using hand washes

Graph 1 shows the average percentage reduction and table 1 shows the average log reduction of the microbial flora of hands by using medicated, ayurvedic and fragrant hand washes. The volunteers were exposed to all the three hand washes for 30 seconds. The results were determined by the viable count using saline samples from the volunteers after handwashing. The results obtained revealed that medicated, ayurvedic and fragrant hand washes all were equally efficient with average of 99.9% reduction of microbial flora of hands. Total log reduction was in the range of 6.22 log cfu/mL, 5.99 log cfu/mL and 5.35 log cfu/mL for medicated, ayurvedic and fragrant hand washes respectively. Similar results were reported by Kim *et al.*, in 2015. They reported log reduction of 6.01 log cfu/mL for medicated soap and 5.77 log cfu/mL for plain soap.



Graph 2 Average percentage reduction of microbial flora of hands by different hand washes on storage

Table 1 Average log reduction of microbial flora of hands

Sr. No	Type of Hand wash	Average log reduction (cfu/mL)
1.	Control	2.00
2.	Medicated	6.22
3.	Ayurvedic	5.99
4.	Fragrant	5.35

Table 2 Average log reduction of microbial flora of hands by different hand washes on storage

Sr. No	Type of Hand wash	Average log reduction (cfu/mL)
1.	Control	2.50
2.	Medicated	1.42
3.	Ayurvedic	0.34
4.	Fragrant	0.30

To Check the Efficiency of Hand Wash on Storage

To check the efficiency of handwash on storage, all three handwash (medicated, Ayurvedic and Fragrant) were opened and stored for 3 months under normal atmospheric conditions. Graph 2 shows the average percentage reduction and table 2 shows the average log reduction of the microbial flora of hands by using old medicated, ayurvedic and fragrant handwashes. For this test, volunteers were subjected to different types of hand washes. Saline samples of washed hands was taken before hand washing with the liquid hand wash and after washing hand with liquid hand washes for 30 second.

CONCLUSION

Hands are the prime source of the disease related to skin, respiration, gastro intestine etc. To cope up with this, hand washing is very important habit to stay away from any kind of disease, infection or disorder. Washing with soap and water is the prime and hygienic source of staying away from any kind of infection. Due to various diseases and germs, the bar soaps get contaminated which may lead to spread of germs. In this sophisticated world, liquid hand washes are used much more frequently than the bar soaps, the additional advantage is, the soap in the liquid hand wash is untouched leading to fresh, uncontaminated hand wash with every new pump.

In market, there are various types of hand washes available, claiming that they kill the harmful germs at considerable rate in minimum time. To determine this, it is necessary to determine the efficiency of handwash. Average percentage reduction and log reduction of the organism was determined for hand wash performing viable count. From the present study the following

conclusion were drawn. The medicated, ayurvedic and fragrant hand wash all gave considerable log reduction while hand washing. The medicated hand wash was found to be more effective than ayurvedic and fragrant hand wash. There was reduction in efficiency on storage for one month after opening the handwash. Out of three; medicated handwash showed the least reduction in efficiency followed by ayurvedic and fragrant handwash.

References

1. Kim S.A., H. Moon, K. Lee and M.S Rhee (2015); Bactericidal effects of triclosan in soap both in vitro and in vivo. *Journal of Antimicrobial Chemotherapy*; doi: 10.1093.
2. Larson Elaine L., Jeannie Cimiotti, Janet Haas, Michael Parides, Mirjana Nestin, Phyllis Della-Latta, Lisa Saiman (2005); Effect of Antiseptic handwashing vs Alcohol sanitizer on Health care- Associated infection in neonatal intensive care units. *ARCH PEDIATR ADOLESC MED*; 159: 377-383.
3. Cannon Jennifer L., Ali Aydin, Amy N. Mann, Stephanie L. Bolton, Tong Zhao (2012); Efficacy of a Levulinic Acid Plus Sodium Dodecyl Sulfate-Based Sanitizer on Inactivation of Human Norovirus Surrogates. *Journal of Food Production*; 75(8): 15321535.
4. Shah Mashood Ahmed, SatheeshBabu Natarajan, Mohd. Gousuddin (2014); Formulation, Evaluation and Antibacterial Efficiency of Herbal Hand Wash Gel. *Int. J. Pharm, Sci. Rev. Res.*; 25 (2): 120-124.
5. Montville Rebecca, Chen Yuhuan, Donald W. Schaffner (2002). Risk assessment of hand washing efficacy using literature and experimental data. *International Journal of Food Microbiology*; 73: 305-313.
6. Carita Savolainen-Kopra, HaapakoksiJaason, Peltola Pila A, Ziegler Thedi, TerttuKorpela, PirjoAnttila, Ali Amiryousefi, PentiiHuovinen, Markku Huvinen, HeikkiNoronon, Pia Rikkala, MerjaRoivainen, Petri Ruutu, JuhaTeirila, ErkkiVartiainen and TapaniHovi (2012); Hand washing with soap and water together with behavioural recommendations prevents infections in common work environment: an open cluster randomized trial. *BioMed Central*; 13(10).
7. Sajed Ahmed Naeem, Dr. Shagufta, Dr. SajjadHaider, Prof. Dr.NosheenWasim Yousaf2, Dr. Imran Ahmed Shan Ali, Dr. Sadaf Imran (2014); Antibacterial Activity of Liquid Hand Washes Against Daily Encounter Bacteria. *IOSR Journal Of Pharmacy*; 4(2): 19-23

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