

## Preparation and testing for the efficacy of polyherbal hand wash

Rajalakshmi M\*

Department of Pharmaceutics, CL Baid Metha College Of Pharmacy, OMR, Rajiv Gandhi Salai, Jyothi Nagar, Okkiyam, Thuraipakkam, chennai-600097, Tamil Nadu, India



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### ABSTRACT

Skin is the largest organ that is covering the human body, which helps in the regulation of the temperature of the body, responding to the sensory stimulus and fighting the harmful microbes that are concerning it. So that is the reason, the cleanliness of the hands are the minimum necessary for preventing and combating the probable infections. Currently, herbs like citrus, neem, turmeric, garlic, aloe are serving humans as antibacterials and antibiotics. These herbs are potent in fighting viruses, bacteria and fungus. In the current research, a hand wash is prepared using various drugs or herbal origins like aloe vera, turmeric and tulsi. This hand wash will be made in solution form and will be tested for the antibacterial activity in several methods. The prepared formulations were light green-emerald green in colour and had a pleasant, agreeable odour. The stability studies revealed the formulation was stable at the given conditions. Overall, the prepared hand washes were proven effective in both the methods for antibacterial activity.

### \*Corresponding Author

Name: Rajalakshmi M  
Phone: 7708696789  
Email: munusamy.rajalakshmi@gmail.com

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### INTRODUCTION

Skin is the largest organ that is covering the human body, which helps in the regulation of the temperature of the body, responding to the sensory stimulus and fighting the harmful microbes that are concerning it. These bacteria will consume the secretions of the body for their primary metabolism and convert them into various chemicals that result in the bad body odour. So that is the reason, the cleanliness of the hands are the minimum necessity for preventing and combating the probable infections [1].

The applications of the extracts and the herbal sup-

plementation is gradually rising from many decades. Plants are high in amounts of chemical constituents like tannins, terpenoids and flavonoids and many other chemicals that have antibacterial properties. [2]. Currently, herbs like citrus, neem, turmeric, garlic, aloe are serving humans as antibacterials and antibiotics. These herbs are potent in fighting viruses, bacteria and fungus [3-5]. That is the reason these drugs have been incorporated in various formulations to fight microbes and free humans from disease caused by them.

In the current research, a hand wash is prepared using various drugs or herbal origins like aloe vera, turmeric and tulsi. This hand wash will be prepared in solution form and will be tested for the antibacterial activity in several methods.

### EXPERIMENTAL SECTION

#### Herbs and chemicals

The herbal material and the chemicals used in the preparation of hand wash were collected from the wholesale dealer from Nellore, Andhra Pradesh. The substances were bought from SD fine chem Ltd. All

the chemicals are of analytical grade and higher quality as declared by the company. The prepared hand wash was compared to a commercial hand wash which was bought from a market which is of a good brand [6].

The dried roots of *Curcuma longa*, dried leaves of *Ocimum sanctum* were powdered into a fine powder and sieved properly. 500g of the powder was extracted with high-grade ethanol and was filtered thoroughly. The filtrate is then dehydrated using a vacuum desiccator. 45g of each extract is accurately weighed and later dissolved in 150 ml of ethanol. The volume is adjusted by concentrating on achieving a final concentration of about 300mg/ml.

### Preparation of hand wash

Pre-weighted amounts of *Aloe vera* gel & glycerin were measured and mixed with alcohol in a wide-mouthed beaker. With occasional stirring, extracts solution is poured into this beaker and combined well. SDS is added to the above mixture and the volume is finally made to 100 ml with double distilled water. Flavouring agents and colours are added according to the appeal of the formulation. The quantities and measurements were tabulated Table 1.

### Screening of formulations

#### Evaluation of physicochemical parameters

The polyherbal hand wash that is prepares were investigated for the physical parameters like the consistency of colour and texture. The pH of the formulations was determined by using a pH meter and the stability studies were conducted using freezing and thawing cycle method. In this method, the formulations were kept at 4,25 and 45°C for 14 days. After the period is over, they are taken out and kept under normal conditions. Then once again the pH, changes in physical parameters and caking, or sedimentation and other signs of instability were observed if any.

#### Antibacterial assay in disc diffusion method

This assay was performed as per a method similar to the technique by Minakshi [7]. In this method, the agar medium was mixed with water and sterilized. It was spread on the petri plates which were marked as Standard, Test and Control. Bacteria that are used in the tests are *E.coli*, *P. aeruginosa* and *S.aureus*. The bacterial cultures were inoculated into the petri plates and then they are incubated in an incubator. Inoculation discs were cut out and sterilized and are saturated using the prepared hand wash and marketed formulation. These discs were placed in those petri plates and are incubated for about 24hrs. Then the petri plates were taken out and the zone of inhi-

bitations was measured.

#### Antibacterial assay in Turbidimetric method

This method requires a Healthy volunteer with no abrasions and traumas and infection son his hands. The chosen volunteer's hands were swabbed twice with sterile cotton swabs one from each hand. These swabs are noted with Before which denotes before the use of hand wash. After which denotes after the use of washes. Simultaneously nutrient broth medium was prepared and equal volumes of the broth were poured into test tubes. Two test tubes were noted as the control group. A sample of nutrient broth was saved and used as a reference group.

Approximately a coin size drop of hand wash was poured on to each hand one hand with the prepared formulation and on eight marketed formulation. Hands are washed properly with the hand washes till they dry up. After washing, the swabbing was performed and inoculated in the test tubes and was incubated for 24 hrs. After the incubation period, the test tubes were measured for absorbance under UV at 600nm.

**Table 1: Formulation protocol**

S.No	Ingredients	TT	TA
1	Turmeric Extract	11ml	11 ml
2	Tulsi Extract	11 ml	—
3	Aloe Vera Gel	15 g	15 g
4	Citronella Oil	2 ml	2 ml
5	Ethanol	25 ml	25 ml
6	Glycerin	25 ml	25 ml
7	SDS (29%)	15 ml	15 ml
8	Lavender oil	2 ml	2 ml
9	Bixa seed paste	2 ml	2ml

**Table 2: Antibacterial activity of the handwash in the turbidimetric method**

Formulation	Absorbance*
TT	0.157±0.02
TA	0.169±0.04
Commercial Hand wash	0.179±0.02
Control	0.587±0.05

The values are mean of three readings.

**Table 3: Antibacterial activity of hand wash in disc-diffusion method**

Organism	Zone of inhibition (mm)			
	TT	TA	Marketed hand wash	Controlled
E. coli	29.35 ± 0.11	25.64±0.84	14.38 ± 0.75	8.68 ± 0.51
S. aureus	22.95 ± 0.85	21.96±0.58	11.62 ± 0.48	6.24 ± 1.80
P. aeruginosa	16.28 ± 0.45	13.57±0.45	6.58 ± 0.88	No inhibition

Values are in the form of mean and standard error in the mean.

**Table 4: Stability testing**

Formulation	Day	Storing at 0c	pH
TT	1	40c	7.31
		250c	7.29
		450c	7.29
	7	40c	7.33
		250c	7.31
		450c	7.29
	14	40c	7.33
		250c	7.31
		450c	7.39
TA	1	40c	7.27
		250c	7.27
		450c	7.33
	7	40c	7.33
		250c	7.27
		450c	7.33
	14	40c	7.33
		250c	7.27
		450c	7.31

## RESULTS AND DISCUSSION

The prepared formulation was a pale green colour and had a delightful flavour. pH test and stability analysis test produced varied results which were given in Table 2. The prepared formulations were light green-emerald green in colour and had a pleasant, agreeable odour. The results of the pH and stability tests were tabulated in Table 2. Overall, the pH of the prepared hand wash was almost neutral to hand and the variance is just below 0.1 in the scale. The stability studies revealed the formulation was stable at the given conditions. There was no change in the physical parameters and pH also Table 3.

The prepared hand wash was tested for the antibacterial activity in disc diffusion method and the results were given in \$. The results prove that the hand wash was comparable and better activity than

the marketed formulation with the almost same formula. The ZOI of better activity of the prepared hand wash was due to the herbal extracts and not due to other chemical added in the formulation. It shows a combined effect of herbal constituents in the hand wash showing antibacterial activity.

Antibacterial activity was also tested in the turbidimetry method and the results were given in Table 4. The absorbance values in the volunteer that used prepared hand wash were higher compared to those of marketed formulation. The results indicate that higher are the absorbance values for those formulations with lower efficiency.

## CONCLUSION

Overall, the prepared hand washes were proven effective in both the activity methods. Further research needs to be conducted to standardize the formulation for licensing and then marketing the formulation.

## CONFLICT OF INTEREST

Authors declared no conflict of interest.

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## REFERENCES

- [1] Chauhan V. In vitro assessment of indigenous herbal and commercial antiseptic soaps for their anti microbial activity. Patiala, India; 2006.
- [2] Cowan MM. Plant products as antimicrobial agents. Clinical Microbiology Reviews.

1999;12(4):564–82.

- [3] Elhag H, Jaber S, El-Olemy M, M M. Antimicrobial and cytotoxic activity of the extracts of khat callus cultures. Janick J, editor; 1999.
- [4] Herraiz T, Galisteo J. Tetrahydro- $\beta$ -carboline Alkaloids Occur in Fruits and Fruit Juices. Activity as Antioxidants and Radical Scavengers. Journal of Agricultural and Food Chemistry. 2003;51(24):7156–7161. Available from: [10.1021/jf030324h](https://doi.org/10.1021/jf030324h).
- [5] Pai MR, Acharya LD, Udupa N. Evaluation of antiplaque activity of Azadirachta indica leaf extract gel—a 6-week clinical study. Journal of Ethnopharmacology. 2004;90(1):99–103. Available from: [10.1016/j.jep.2003.09.035](https://doi.org/10.1016/j.jep.2003.09.035).
- [6] Saxena S, Gomber C. Antimicrobial Potential of Callistemon rigidus. Pharmaceutical Biology. 2006;44(3):194–201. Available from: [10.1080/13880200600685899](https://doi.org/10.1080/13880200600685899).
- [7] Joshi M, Kamat G, Kamat DV, D S. Evaluation of herbal handwash formulation. Natural product radiance. 2008;7:413–415.

#### ABOUT AUTHORS



Rajalakshmi M

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