

**FORMULATION AND EVALUATION OF HERBAL HAND WASH****Priyanka Godase,* Suraj Kamble, Sanjay K. Bais***Fabtech College of Pharmacy, Sangola**Tal-Sangola, Dist.-Solapur**Maharashtra -413307***ABSTRACT**

The cosmetics are made entirely of natural substances; they don't contain any synthetic elements that could damage skin.

The majority of hand sanitizers available in the market are alcohol-based hand antiseptics, which may have negative effects. Antibiotics may result in dermatitis, dryness, irritation, and itching. It works well against. Skin samples from volunteers were tested with various antibiotics, and the outcomes were inspected in containers. Because of the botanical qualities in the extract, the cup and saucer method findings demonstrated the effectiveness of hand antiseptics made with ginger alcohol extract and ginger aqueous extract. According to recent research, using herbs and incorporating them into recipes can improve outcomes. Antibiotics include chemical characteristics such as pH, viscosity, foam height, and foam retention in addition to physical characteristics including colour and odour.

Two hand disinfection formulations were assessed according to their physical attributes, pH, and viscosity. The purpose of this research is to create hand sanitizer using ginger ethanol extract.

Keywords: *Anti-microbial activity, herbal handwash, hygienic, organic handwash, Antibacterial Properties, Antifungal Properties.*

*Corresponding Author Email: - Priyankagodase5161@gmail.com

Received on 06 July, 2024, Accepted 15 July, 2024

Please cite this article as: Godase Priyanka et.al Formulation and Evaluation of Herbal Hand Wash

International Journal of Pharmacy And Herbal Technology 2024.

INTRODUCTION

Cleaning your hands to remove dirt, bacteria, germs, and other potentially dangerous organisms is known as hand washing in terms of personal hygiene. In order to protect health and stop the spread of disease, this approach is required. You should occasionally use hand sanitizer in addition to routinely washing your hands with soap and water. Cleaning your hands is particularly necessary after using the restroom, before preparing or eating food, after coughing or sneezing, and after going somewhere in public. You can easily lower your risk of illness and enhance your general health by washing your hands frequently.^[1] Hand sanitizer, which is frequently derived from plant, herb, and botanical extracts, is one instance of a hygiene product manufactured with natural or herbal ingredients. While traditional hand sanitizers may contain artificial scents or perfumes, herbal hand sanitizers combine the health advantages of several herbs for hand washing and disinfecting. Antiseptic, antibacterial, and antifungal chemicals are frequently found in herbal hand sanitizers. Botanical extracts from plants like neem, aloe vera, chamomile, lavender, eucalyptus, and tea tree oil are examples of herbal components. This solution not only cleans hands but also softens skin, lessens irritation, and leaves hands smelling nice and natural.^[2]

One of the more organic and environmentally friendly hand sanitizer alternatives that people usually look for is herbal hand sanitizer. It's important to remember that when and how you wash your hands affects how effective your handwash herbal or not.^[3]

The most crucial precaution against the spread of pathogenic microorganisms and diseases is good hand cleanliness, as this is the primary means of spreading bacteria and infections. The most effective, easy, and economical way to avoid nosocomial infections is to wash your hands frequently. One way that germs might spread is through contaminated hands. When someone who handles food contaminates their hands and then comes into touch with food or beverages on them, they can spread the pathogenic bacteria that cause outbreaks from person to person. When these bacteria are consumed by the client, they are exposed and could get sick to their stomach.^[4]

ADVANTAGES OF HERBAL HAND WASH

No unanticipated consequences.

There are less germs on our hands.

It also aids in the removal of fungal and antiseptic skin problems.

It also aids in the efficient removal of debris and oil from the skin.

Easier to use than a wash with soap and water.

The simplest method for eliminating germs.

Washing our hands keeps illnesses out of our bodies.^[5]

DISADVANTAGES OF HERBAL HANDWASH

Skin damage that persists.

Eczema and itchy contact dermatitis.^[6]

MATERIAL AND METHOD

TULSI

Strong antibacterial and antifungal qualities of eugenol and other essential oils found in tulsi help efficiently cleanse the skin and eradicate dangerous bacteria and germs. Tulsi's anti-inflammatory qualities soothe sensitive skin by reducing swelling and redness. Because of this, people with sensitive skin types may use it.^[7]

Tulsi's high antioxidant content shields the skin from the damaging effects of free radicals, leaving it feeling healthier and more resilient. When washing your hands, the distinct, pleasant scent of tulsi can be relaxing and soothing. Its fragrant qualities also add to the calming effect. As a natural detoxifier, tulsi clears the skin of pollutants and toxins, keeping hands clean and healthy in the process.^[8]

PEPPERMINT

Skin cleansing and disinfection are aided by menthol and other antibacterial chemicals found in mint. Hands feel clean and energized after using the mint menthol's soothing and refreshing impact. Hands feel clean and energized after using the mint menthol's soothing and refreshing impact.^[9] Hand washing can be made more joyful with the help of mint, which has a nice, fresh aroma that can help conceal bad odours. The astringent qualities of mint tighten the skin, which is beneficial for preserving the skin's suppleness and elasticity.^[10]

GINGER

Two of the chemicals found in ginger, shabuo and gingerol, have antibacterial qualities that aid in getting rid of dangerous bacteria and germs from the skin. the characteristics that lessen inflammation. Ginger's anti-inflammatory qualities, which lessen redness and puffiness and calm irritated skin, make it a great choice for sensitive skin.^[11] Ginger's strong antioxidant content helps shield the skin from oxidative damage brought on by free radicals. Hand washing is made more enjoyable by the warm, spicy scent of ginger, which has the potential to be both revitalizing and exciting. Ginger can be used as a natural exfoliator, clearing the skin of debris and dead skin cells to leave it clear and clean.^[12]

ALOE VERA

Aloe vera is well known for its moisturizing properties, which keep the skin feeling silky and preventing dryness. This is especially crucial for hand soaps because repeated washing can deplete the skin's natural lipid layer. calm and energizing. The anti-inflammatory qualities of aloe vera aid in soothing sensitive or inflamed skin. It can also aid in the healing of minor cuts, scrapes, and skin irritations. Aloe vera has antibacterial chemicals in it that help lower the amount of microorganisms on skin. Packed with Nutrients. Aloe vera contains minerals, vitamins (A, C, E, and B12), enzymes, and amino acids that nourish and improve skin health overall. Aloe vera's antioxidants aid in the battle against free radicals, which hasten the aging process of the skin. You can preserve the suppleness of your skin and lessen the appearance of fine lines by applying it frequently. Aloe vera is good for all skin types, especially sensitive skin, because it cleanses the skin gently without being too abrasive.^[13]

FORMULATION TABLE

Ingredients	Quantity	Role
Tulsi extracts	10 ml	Anti-bacterial
Ginger extracts	5 ml	Anti-oxidants
Mint	5ml	Anti-inflammatory
Aloe vera juice	10 ml	Soothing properties
SLS	8gm	Foaming agents
Carbopol 940	2gm	Gelling agents
Glycerin	20 ml	Moisturising agents
Rose water	5ml	Perfuming agents
Methyl parabean	0.3	Preservative
Distilled water	Quantity sufficient 100ml	-

Table No. 1: Formulation Table

COLLECTION OF PLANT MATERIAL

Fresh ingredients such as aloe vera (*Aloe vera*), mint (*Mentha spicata* linn.), Tulsi leaves (*Ocimum tenuiflorum*), and ginger rhizome (*Zingiber officinale*) were bought from the local markets.

EXTRACTION OF PLANT MATERIAL

Regular application reduces the appearance of fine wrinkles and keeps the skin smooth. All skin types, even sensitive skin, benefit from aloe vera's gentle, non-abrasive cleansing properties.^[14]

METHODOLOGY

Take the extract solutions of ginger, Tulsi, and mint (8 ml, 16 ml, and 5 ml, respectively).

In line with established protocol, sodium lauryl sulphate (SLS) was added to the hand wash.

Include Carbapol-940, a water-soluble polymer that is an easy-to-use thickening, stabilizing, suspending, and emulsifying component.

Include one millilitre of rose water—used as a scent agent—along with the required amount of glycerine.

Finally, add the preservative and use distilled water to regulate the volume.

The solution was utilized at room temperature following homogenization.^[15]

EVALUATION TEST

Physical Evaluation

Through sensory and visual evaluation, the physical assessment (color, fragrance) was conducted and compared with hand wash gel that was sold.

Foam Height

One milligram of hand wash gel was dissolved in fifty milliliters of purified water. The mixture was put into a 500 ml measuring cylinder. The volume reached 100 ml after the addition of water. After receiving 25 blows, it was expelled. The froth was seen to rise far above the water's volume.^[16]

Viscosity

A digital Brook field viscometer was used to determine the hand wash gel's viscosity. The viscosity of the measured amount of gel was measured three times by submerging the tip of the viscometer into the hand wash gel in a beaker.^[17]

pH

The resulting polyherbal hand wash gel sample was diluted to one gram using 100 milliliters of distilled water. We used a digital pH meter that had been previously calibrated to find the solution's pH.^[18]

Dirt Dispersion Test

A test tube was filled with ten milliliters of distilled water and one millilitres of hand soap. The test tube was stopped and shaken after an addition of one drop of Indian ink. The amount of ink in the foam was estimated.^[19]

Skin Irritation Test

After applying and leaving on the herbal handwash for half an hour, the degree of skin irritation was assessed. After half an hour, the skin was assessed with both visual and tactile modalities to look for redness, rashes, or irritation.^[20]

Homogeneity And Grittiness

The evaluation of look and uniformity was done visually. After testing for grittiness by rubbing one millilitre of handwash between two fingertips, the formulation was evaluated.^[21]

RESULT

In this study, a gel-based hand cleaner was made using extracts from the ginger rhizome. The composition was developed with popular excipients that work well with formulations intended for hand cleaning. The product's efficacy against pathogenic bacteria obtained through volunteerism was demonstrated using an in-vitro antimicrobial test and an organoleptic stability assessment. The antibacterial properties of the disc diffusion method were demonstrated.

EVALUATION OF HERBAL HAND WASH

Sr. No.	Parameter	Observations
1	Colour	Yellow
2	Odour	Smooth
3	Texture	Sweet, Rosy fragrance
4	Foam Height	3.2 cm
5	Viscosity	47 to 112 m pascals
6	PH	7.78
7	Dirt dispersion test	Light dispersion
8	Skin Irritation Test	No irritation
9	Homogeneity and grittiness	Luminous or translucent

Table No 2: Evaluation Of Herbal Hand Wash

DISCUSSION

The plant's rhizome is full of several substances, including alkaloids, sugars, glycosides, and tannins. We have screened ginger extract for phytochemicals. The antibacterial qualities of ginger extract hand wash are exemplified by its capacity to eliminate hazardous germs. Since the hands are the body part most exposed to bacterial infections, protecting them is essential to preventing bacterial illness. Consequently, a herbal hand wash with antibacterial properties was developed that has no negative effects. As the methodology section explains, the hand wash was created using three different techniques, and plant extracts were added to the exterior. When selecting plants, reports on biological activity and traditional medicinal uses in India were taken into account.

CONCLUSION

The experimental work on the preparation and evaluation of a herbal hand wash has yielded promising results, demonstrating that the selected herbs, such as neem, aloe vera, and tea tree oil, provide significant antibacterial and antifungal benefits. The formulations maintained appropriate pH levels, exhibited consistent texture and stability, and effectively reduced microbial colonies, proving their efficacy in maintaining hand hygiene. Skin compatibility tests and user feedback confirmed the product's safety and high user acceptance, with positive remarks on fragrance, texture, and skin feel. Adhering to quality control standards and regulatory compliance ensures the product's reliability and market readiness.

Continuous research and refinement will further enhance the formulation, potentially expanding the product line to cater to various skin types and consumer preferences. Overall, the herbal hand wash developed through this experimental process offers a natural, effective, and user-friendly solution for hand hygiene.

REFERENCE

1. Altman R.D, Marcussen K.C, Effects of a ginger extract on knee pain in patients with osteoarthritis. *Arthritis Rheum*,2001,4(1), 84-85.
2. Abbi D.K. Useful plants of Ghana – West African use of wild and cultivated plants. Intermediate Technology Publications and the Royal Botanic Gardens Kew,1990,7(2),7-9.
3. Boyce J M and Pittet D. Guideline for Hand Hygiene in Health-Care Settings. *Morbidity and Mortality Weekly Report* 2002,12(7), 36-37.
4. Bischoff W.E, Reynolds T.M, Sessler C.N, Edmond M.B and Wenzel R.P. Handwashing compliance by health care workers: the impact of introducing an accessible, alcohol-based hand antiseptic. *Arch Intern Med* 2004, 75(4), 57-60.
5. Bischoff W.E, Reynolds T.M, Sessler C.N, Edmond M.B and Wenzel R.P. Handwashing compliance by health care workers: the impact of introducing an accessible, alcohol-based hand antiseptic. *Arch Intern Med* 2000, 55(1), 67-73.
6. Ghimire, P. L. Value Chain Analysis of Ginger Sector of Nepal: A Study on Governance Structure and Upgrading strategies for Micro, Small and Medium sized Enterprises. Unpublished Master's Thesis for the Partial Fulfillments of the Degree of MBA in SME Development", International SEPT Program, University of Leipzig, Germany,1998, 23(9),78-80.
7. Issac O. Recent progress in chamomile research- medicines of plant origin in modern therapy. 1st edition Czecho-Slovakia, Prague press: 1989, 45(7), 45-50.
8. Maury E, Alzieu M, Baudel JL, Haram N, Barbut F, Guidet B, et al. Availability of an alcohol solution can improve hand disinfection compliance in an intensive care unit. *Am J Respir Crit Care Med* 2000, 4(1), 12-15.
9. Majumdar S.H et al, Kadam S.S. "Formulation and Antimicrobial Activity of Liquid Herbal Hand Wash". *Journal of Advanced Drug Delivery (JADD)* 2005, 2(1), 27-30.
10. Mahran, G.E, Glombitza K.W, Mirhom Y.W, Hartmann R and Michel C.G. Novel saponins from *Zizyphus spina-Christi* growing in Egypt. *Planta Medica* 1996, 19(5), 213-215.
11. Palash Mandal, et al, Prince Kumar Pal. "Formulation and Evaluation of Hand wash of *Vitex Negundo*". *World Journal of Pharmacy and Pharmaceutical Sciences* 2017, 7(3), 459-460.
12. Power P.V., Bhandaul NR et al "Formulation and Evaluation of Poly Herbal anti-Bacterial Gel Based Hand wash International sourced of *Pharmaceutical Sciences, Review and Research* 1999, 6(1), 127-130.
13. Ravi K, Pratibha MD & Kolhapure SA, Evaluation of the antimicrobial efficacy and safety of Pure Hands as a hand sanitizer: *Indian Journal of Clinical Practice*, 2005, 1(1), 45-50.
14. Rassol Bazigha Kadhim et al, Ali Heyam Saad, "Formulation and Evaluation of Herbal Hand Wash from *Matricaria Chamomilla* Flowers" *International Journal of Research in Ayurveda and Pharmacy* 2011, 6(2), 45-47.

15. Suekawa M, Ishige A, Yuasa K, Sudo K, Aburada M, Hosoya E, Pharmacological This article can be downloaded from www.ijpbs.net P - 292 studies on ginger. Pharmacological actions of pungent constituents, [6]-gingerol and [6]-shogaol. J Pharmabiotech, 1984, 14(3), 14-16.
16. Singh O, Khanam Z, Misra N, Srivastava M K. Chamomile (*Matricaria Chamomilla* L.): An overview. PhcogJ 2011, 57(1), 18-20.
17. V. Duraipandiyar, M. Ayyanar, and S. Ignacimuthu, "Antimicrobial activity of some ethnomedicinal plants used by paliyar tribe from Tamilnadu, India," BMC Complementary and Alt. Med, 2006, 45(1), 111-114.
18. Vyas P. Antimicrobial Activity of Ayurvedic Hand Sanitizers. Int. J. Pharma. I & Bio. Archives, 2011, 6(1), 713-715.
19. S. D. Sonawane, S K Bais, Quality Control and Quality Assurance in Pharmaceuticals International Journal of Advanced Research in Science Communication and Technology, 2023, 1(1), 15-16.
20. Shirish B. Nagansurkar, Sanjay K. Bais, Komal K. Maske, Herbal Hand wash, in Pharmaceuticals International Journal of Advanced Research in Science Communication and Technology, 2023, 2(1), 81-94.
21. Shirish B. Nagansurkar, Sanjay K. Bais, Nikita D. Pawar, Extraction And Assessment Of Antimicrobial Activity Of Tulsi, International Journal Of Pharmacy And Herbal Technology, 2023, 1(1), 77-80.