



FORMULATION AND EVALUATION OF HERBAL HAND WASH

¹Prabir Barman, ^{2*}Sujit Das and ³Sourabh Deb

¹Junior Project Fellow, ²Research Scholar, ³Assistant Professor,

¹Department of Forestry and Biodiversity, Tripura University, (A central University) Suryamaninagar, 799022, Tripura, India

ABSTRACT

Herbal medicine implies substantial historical utilize and this is certainly true for many products that are available as traditional herbal medicines. The hands of health care workers have been the main sources of transmission of infection to the patients. Therefore it brings up the use of antiseptic for handwashing purposes. Herbal medicine is utilized in many ways namely fever, diarrhoea, cough, influenza, etc. So, the present study was focus on formulated handwashing gel with the help of Neem (*Azadirachta indica*) and Citrus Limon (*Citrus Limon (L.)*) Hand wash is making through the lemon juice with methanolic extracts and added glycerine and dilute with the proper amount of distilled water. The hand washes evaluated by the different parameters namely as color, odor, pH, and viscosity, etc. Results revealed that herbal hand wash formulation is more efficient in reducing the number of organisms from hands than the commercial antiseptic handwashing gel thus it can be used as a handwashing gel with no side effects.

Keywords: Herbal hand wash, Formulation, Evaluation, Neem and Lemon Extracts, Skin pathogens.

INTRODUCTION

Herbal medication is additionally known as Botanical treatment or Phyto-medicine. Herbal medication refers to the utilization of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. An herbal drug treatment offers a healthy life. It was generally used to furnish first-line and common health supplier (Ravi *et al.*, 2005). Since ancient times in India, herbal medicines have been the basis of treatment and cure for numerous diseases. Physiological conditions in traditional methods were practiced such as Ayurveda, Unani, and Siddha (Burke, 2003). Herbal medicines having numerous therapeutic uses like healing wounds, treating inflammations because of infection, skin lesions, leprosy, diarrhea, scabies, venereal diseases, snake bite, and ulcers, etc. Hands are the primary mode of transmission of microbes and infections (Padalia & Salgaonkar, 2015). Hand hygiene is

one of the most important measures to prevent harmful bacterial infections and to prevent infection (Natarajan & Shah, 2014). Hand washing is the act of germless hands to remove soil, dirt, pathogenic microorganisms, and avoid transmitting of transient microorganisms (Power *et al.*, 2014). Hand Washing removes visible dirt from hands and reduces the number of harmful microorganisms such as *E.coli* and salmonella may be carried by people, animals, or equipment & transmitted to food. To defend the skin from harmful microorganisms and to avoid spreading of various contagious diseases, hand washing is extremely important precaution (Choudhari & Sutar, 2016). The present study was aimed to formulate herbal hand wash gel with the help of neem (*Azadirachta indica*), ghito-kumari (*Aloe vera*), and citrus Limon (*Citrus Limon (L.) Osbeck*) belongs to the botanic family Meliaceae. All the parts of the Neem tree have been used as traditional Ayurvedic medicine in India. Neem oil, bark and leaf extracts have been used clinically to control leprosy, intestinal helminthiasis, respiratory disorders, and constipation. Neem leaves contain extensive antibacterial action against Gram-negative and Gram-positive microorganisms (Jyothi *et al.*, 2012). Citrus Limon belongs to the family Rutaceae. It is traditionally used to clean due to its disinfectant properties. Lemon juice is additionally used as a short term preservative in some food preparations. Lemon juice is used in Indian medicinal systems because of the antimicrobial properties of lemon (Jyothi *et al.*, 2012; Ali *et al.*, 2011).

MATERIALS AND METHODS

Collection of plant materials

The plant's Neem (*Azadirachta indica*) and *Citrus Limon* (*Citrus Limon (L.) Osbeck*) were collected from the local market of Tripura. The sample was washed thoroughly with fresh water to remove sand particles. The plant materials were collected and separated and are then dried under shade drying for 4-5 days. Then the dried plant materials were crushed, sieved to get nearly fine amorphous powder. Powdered material was extracted with a suitable solvent or mixture of solvents.

Preparation of herbal leaf extracts

The hand wash was prepared from the methanolic extracts of each plant material; 20 gm of the powdered materials were extracted with 80 ml of methanol solution for 48 hrs. The content was filtered through Whatmann filter paper to get the particle-free extract.

Preparation of hand-wash

The hand wash was prepared by adding lemon juice with methanolic extracts of each plant material in glycerine and distilled water. Finally, sodium laurel sulfate, methylparaben, HPMCE-50 (gelling agent) and flavoring agents were added as per the requirement of standard procedure for preparation of hand wash. The solution was made homogenous under room temperature and stored for further analysis.

Estimation of Herbal wash

Organoleptic evaluation (color, odor) was done by sensory and visual inspection and compared to the marketed hand wash. The evaluations were carried out on the hand wash by using the following parameters:

Chemical Properties of the extract

Color and odor of prepared ointment were examined by visual examination. The pH of ointment was determined by a digital pH meter. The viscosity of hand wash was determined by using Brookfield viscometer.

RESULTS

Preliminary chemical parameters of hand wash gel and their observed findings were shown in table 1. We observed that the gel was shown green in color with a bitter smelly light lemony fragrant. The pH of this gel was ranged between 5.92-6.04 that's mean moderately acidic. The viscosity of this liquid was recorded 60 Centipoises Pascal seconds (CPS).

Table: 1: Showing different chemical parameters of hand wash gel along with their observations

Sr. No.	Parameters	Observation
1	Color	Green
2	Odor	Characteristic (Bitter smelly with light lemony fragrant)
3	pH	5.92-6.04
4	Viscosity	60 CPS

DISCUSSION

In general, soaps are used for cleaning purposes and to get rid of dirt and microbes present on the surface of the skin. The selection of soap varies from person to person however it mustn't have an effect on sensitive skin and it should be effective against disease-causing microbes present on the skin.

Neem is reported to contain diterpenoids like Neembinone and Neembine that possess antibacterial activity against various gram-positive and gram-negative organisms (Schmutterer, 1995 & Mahesh B, Satish S, 2008). This better result may be due to the presence of citric acid in lemon juice. Citric acid is reported to have a potential effect on bacteria. In the present context, the plants under study are rich in these varied compounds and hence are more effective against skin pathogens. The leaves of *Azadirachta indica* are widely used for medicinal purposes. The prepared hand wash is more effective than the commercially available synthetic hand washes. Thus, these compounds can be extracted and incorporated in bases to prepare superior antimicrobial hand wash with less or no side effects. Hence a new way can be found to come back antibiotic-resistant of the pathogenic organism and provide safe and healthy living through germ freehand all though the removal is not 100% but a major number can be reduced.

CONCLUSION

In the present study, natural active constituents in Neem and Limon extracts manifested superior inhibition against skin pathogens than synthetic antimicrobials present in the commercially available antiseptic gels. Therefore, these compounds were extracted and incorporated in hand wash gel bases to prepare superior antiseptic liquid with less or no side effects with the low money inputs. Hence, a new way can be found to combat antibiotic resistance of pathogenic organisms and provide safe and healthier living through germ-free hands. Although the removal is not 100%, a major number can, and maintained a good health which is an important wealth for our daily life.

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