Formulation And Evaluation of Paper Soap
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[1]Mansi Pravin Patil, [2]Mansi Ratilal Patil, [3]Mansi Sanjay Patil, [4]Hitendra S. Chaudhari, [5]Yogesh B. Rokde,[6]Roshan M. Chaudhari, [7]Sunil P. Pawar.
[1-3] Student, Department of Pharmaceutics , P.S.G.V.P.Mandal's College of pharmacy , Shahada, Nandurbar.
[4-6] Student, Department of Pharmaceutics , P.S.G.V.P.Mandal's College of pharmacy , Shahada, Nandurbar.
[7]Principal, Department of Pharmaceutics , P.S.G.V.P.Mandal's College of pharmacy , Shahada, Nandurbar

**ABSTRACT:**

People are more likely to get bacterial skin infections, which need careful attention to both treat and preserve healthy skin. This article's frequently used hand wash preparation calls for making paper soap with almond and peppermint and assessing its parameters. According to the study, the tested paper soaps may have antimicrobial qualities and can help treat and manage bacterial skin infections if they are properly prepared using the right plant materials to target particular causative organisms and packaged with usage and storage instructions. It has been demonstrated that washing hands with soap effectively removes bacteria, germs, and chemicals that can illness or injury to oneself. Although this is a crucial habit for the general population, it is especially necessary for those who handle food or work in the medical field. Bacterial skin infections are typically prevalent in the surrounding environment. In these situations, maintaining appropriate health hygiene and providing curative measures demand a great deal of attention. Certain natural extracts made from medicinal plants have antimicrobial properties. In this research, we manufacture antibacterial paper soap with eucalyptus oil and assess its in-vivo antibacterial activity, making it the most popular handwash preparation. Nonetheless, aromatherapy has fewer negative effects, is environmentally benign, and is enjoyable. According to the study, the assessed paper soap may have antimicrobial qualities, which may help treat and prevent bacterial skin infections if a well-balanced amount of natural excipient and reagents is added to target specific contributing organisms and packaged with proper Guidance.

**KEYWORDS:** consumers of medicinal plants, skin diseases, paper soaps, and antimicrobial

properties.

## INTRODUCTION:

Paper soap is a substantial innovation in soap products; it is printed or molded to be as thin as paper, but when it comes into contact with water, it dissolves and transforms into foam. Due to its thinness and tiny size, soap paper is typically used as a disposable hand soap that can be carried anywhere and is ideal for usage when engaging in any outdoor activity. Nowadays, lipids and an alkali are used to make soap. While some soap producers still employ the traditional hot process, the cold process is currently the most often used method for creating soap[1].

People prefer hand soap that is portable and easy to carry about these days. When paper soap is exposed to water, it dissolves and transforms into foamue to its thinness and tiny size, soap paper is typically used as a disposable hand soap that can be carried anywhere and utilized for outdoor activities. It is still tough to locate a paper soap manufacturing in Indonesia. Most paper soap is made in China, where it is done so on a large industrial basis.

Given the rising incidence of illnesses brought on by microbes, good hygiene is crucial. Modern bath soap comes in two primary varieties that are sold on the market: liquid and solid. People choose their soap based on a number of reasons. Carrying convenience is one of them. The soap recipe itself has been innovated with paper soap, which is printed and shaped as thin as parchment. Itis crucial to have to maintain the necessary cleanliness while traveling soaps on hand. This is when paper soaps become a crucial component and travel soaps populate. As soon as Arrives in coming into touch with water it absorbs moisture quickly and produces foam that resembles regular soap and gels. Paper-based soap is made mostly in China on a large industrial base [2].

## ADVANTAGES:

1) Pocket-solution

Soap dispensers are placed in one place and can’t be carried everywhere. Whereas, soap strips slide into your tiny pocket without taking up much room. It also makes a sophisticated hand hygiene option to carry around.

2) Moisturizing effect

Bufin Soap strips offer the added benefit of added moisturizers as it is made from pure coconut oil which prevents hands from getting dry.

3) Multisensory Experience

Soap strips also have the multi-sensory advantage of calming fragrances and natural elements that protect your hands. Check out Bufin's range of soap soothing fragrances- Jasmine, Green Orchid, Rose, Blue-Lily.

4) Cost-effective

If we compare the prices, Soap strips are more cost-effective than liquid soap. The reason is, that soap strips have a non-toxic formula made from natural ingredients like coconut oil.

5) Sustainability

Soap strips make it a more sustainable option. Unlike plastic containers, they are packed in boxes made of thin cardboard, which uses less material than the thick plastic that liquid soap bottles are made of and it is a known fact that plastic takes years to decompose in a landfill.

6) Other benefits of soap strips:

Unused soaps don't get slimy or mushy, which means your soaps are safe, although they are left unused. They make for the perfect travel buddy as they're small, durable and efficient[3].

**DISADVANTAGES:**

1) Permeable to water, water vapor, aqueous solutions, emulsions, organic solvents, gases- (eg oxygen, carbon dioxide and nitrogen), aromas, etc.

2) Most papers are not resistant to grease or greasy substances. Not heat sealable [4].

**PAPER SOAP:**

Paper soap is a thin layer of soap. It is an anionic surfactant that is used with water to wash and clean, although everyone uses herbal products these days as they have no negative side effects. For this reason, we make herbal paper soap and use herbal goods. Sandalwood and orange peel extract were used to make the polyherbal soap, which was then assessed using a number of criteria, including skin irritation, pH, foam height and retention, and high temperature stability[5].

**AIM AND OBJECTIVE:**

The creation of a multipurpose and handy hygiene solution that combines the advantages of herbal components with the portability and simplicity of use of paper soap is the goal behind

the formulations and evolution of polyherbal paper soap. This entails creating concoctions that combine a variety of plant extracts renowned for their nourishing, moisturizing, and cleaning qualities. The goal of polyherbal paper soap's evolution is to enhance its efficacy, aroma, durability, and general user experience through continuous research, development and innovation.


**PROCEDURE:**

First we had taken beaker and weigh accurately the Lemon Grass oil, Pippermint oil, Almond oil, Aloe vera jelly, Glycerol, Rosewater were added. After that proper mixed all ingredients then Sodium lauryl sulphate and perfume were added, and everything was thoroughly mixed. The volume was then calculated using green color. Warming up the semi-solid liquid, we added white petroleum jelly, gave it a few shakes, and spread it out on A4-sized butter paper. After the paper has dried for a while, cut it to size, and cover it to packed and finally prepared paper soap strip [2].

**FORMULA:**

This table 1 shows the Ingredients & Quantity for the preparation of the paper soap.

Table 1. Formula for preparation

| Sr. No. | Ingredients | Quantity |
|---|---|---|
| 1. | Lemon Grass Oil | 2ml |

| | | |
|---|---|---|
| 2. | Peppermint Oil | 4ml |
| 3. | Almond Oil | 10ml |
| 4. | Sodium Lauryl Sulphate | 10gm |
| 5. | Rose Water | 20ml |
| 6. | Glycerol | 15ml |
| 7. | Aloe Vera Gel | 18ml |
| 8. | White Petroleum Jelly | 8ml |

**Role of Ingredients:**

The following table 2shows the role of Ingredients used in Formulation of paper soap.

Table 2: Ingredients & Their role.

| Sr.No. | INGREDIENTS | ROLE OF INGREDIENTS |
|---|---|---|
| 1. | Lemon grass oil | Antibacterial, fragrance |
| 2. | Pippermint oil | Antimicrobial |
| 3. | Almond oil | Antioxidant, anti-inflammatory |
| 4. | Sodium lauryl sulphate | Foaming agent |
| 5. | Rose water | Smoothing agent |
| 6. | Glycerol | Moisturizer |
| 7. | Aloe-vera gel | Anti-inflammatory |
| 8. | White petroleum jelly | Moisturizer |

**EVALUTION PARAMETERS:**

**1) Physico - chemical: -**

The following Table 3 shows Various physicochemical parameters which are performed for paper soap

Table 3- Evaluation parameters

| Sr.No | Parameter | Test |
|---|---|---|
| **1.** | Odour | By Smell |
| **2.** | Colour | By Visually |
| **3.** | Texture | By Touch |
| **4.** | Size | By Measurement |
| **5.** | Shape | By Visually |
| **6.** | pH | By Litmus pH Paper |

**2) Foam Height:**

25 milliliters of distilled water were mixed with 0.5 grams of soap sample. After that, pour it into a 100 ml Measuring cylinder with a 50 ml capacity using water. After applying 25 strokes, the foam height was measured above the aqueous volume and held till the aqueous volume was measured up to 50 ml.

**3) Foam Retention:**

A “patch test” is used to taste it. Apply the product to a 1-cm patch of skin; if there are no rashes or swelling, the product is said to be non-sensitive .

**4) Sensitivity:**

A “patch test” is used to taste it. Apply the product to a 1-cm patch of skin; if there are no rashes or inflammation, the product is deemed to be sensitive[6].

**5) Primary skin irritation test:**

For this, a minimum of three volunteers were chosen, and after applying soap strips to their hands, the degree of irritation was been examined.

**6) Foam stability test:**

The amount of foam produced by paper soap is measured for consistency. Compared to conventional soap, the resulting froth on paper soap is smoother. When combined with water, the foam that is stable in the presence of a foaming agent solution that contains surface active agent will form stable foams. In actuality, glycerol doesn't include ant surface active ingredients and doesn't significantly affect the stability of foam.

### 7) Weight gain test

A computerized electronic balance was used to calculate the weight increase. The value was obtained by deducting the paper's dry weight from the prepared paper soap strip. for the paper's ability to absorb soap. A mean of 20 soap strips, both medicated and non-medicated, were taken into account [7-10].

**Result:**

The Table 4 Shows the F1 , F2 and F3 formulation of paper soap

Table 4: different formulation.

| Sr. No | Parameter | F1 | F2 | F3 |
|---|---|---|---|---|
| 1. | Colour | Dark Green | Green | Light Green |
| 2. | Odour | Light Pleasant | Pleasant | Pleasant |
| 3. | Texture | Less Smooth | Smooth | Very Smooth |
| 4. | pH | 5 | 6 | 4 |
| 5. | Size(cm) | 3x5 | 3x5 | 3x5 |
| 6. | Shape | Rectangular | Rectangular | Rectangular |
| 7. | Foam Height(cm) | 30 | 35 | 34 |
| 8. | Foam Retention(min) | 2 | 4 | 6 |
| 9. | Sensitivity(min) | 3 | 7 | 9 |
| 10. | Irritation(min) | 4 | 8 | 12 |
| 11. | Weight Gain Test | 0.120 | 0.130 | 0.122 |

| | | | | |
|---|---|---|---|---|
| 12. | Primary Skin Irritation Test(volunteers) | No Irritation | No Irritation | No Irritation |

## CONCLUSION:

In conclusion, the A4 size butter paper strips from the created paper soap strips produce the best results when compared to the other chosen papers. Demonstrating strong penetration and efficiency. The ready soap strips are a unique and convenient kind of Beneficial to both sexes and ages. Paper soap is a really Positive items used when traveling. Paper soap is a tiny, incredibly useful item that is very beneficial. Paper soap is widely used these days, which is the reason However; the paper soap is not lost. Paper soap Very easy to carry out in purrs with soap. The comprehensive Final thoughts are listed below which mostly represents the conclusions reached by different authors and maintained in their research. Spreading material on A4-sized butter paper yields the best outcomes when compared to other chosen papers in the paper soapmaking process.

The physicochemical, pH foam height, form retention, sensitivity, and irritation of the formulated paper soaps were assessed, and the findings were within acceptable bounds. It was discovered that making stable paper soap was easier and simpler with the liquid soap recipe that included peppermint oil, almond oil, and aloe vera. Additionally, it has a spectrum of recognized antibacterial activity that makes it a viable substitute for liquid soap and relatively simple to use in recipes calling for synthetic antimicrobial agents.

According to formulation F1, F2 and F3 the F3 formulation was best as compared to F1 and F2

Because its shows standard evaluation parameters. F3 Formulation was best as per evaluation parameter and also shows effective as compared to F1 & F2 formulation.

## REFERENCES:


1 Dr Saraswathi, Dr Kavitha PN, Mahalakhsmi Sampagavi,et al, “formation and evaluation of herbal Paper soap”, International Journal of Pharmaceutical Sciences and Drug Analysis,1(2)2021.

2 Kuril M, et al, “formulation and evaluation of polyherbal paper soap”, Journal of Innovation and Invention in Pharmaceutical Sciences,1(1):2020,54-57.

3 Dr. C. K. Kokate, Dr. A. S. Gokhale, prof. S. B. Gokhale, Cultivation Of Medicinal Plants, publication-Nirali Prakashan, edition- April 2019.

4 Mondal S, Kolhapur SA. Evaluation of the antimicrobial efficacy and safety of Pure Hands Herbal Hand sanitizer inhand hygiene and on Inanimate objects. The Antiseptic2004;101(2): 55-57.

5 Gupta A.K., Ganjewala D. A study on biosynthesis of “citral” in lemongrass (Cymbopogon flexuosus) cv. Suarna. Acta Physiol. 2015;37:240. Doi: 10.1007/s11738-015-1989-2. [CrossRef] [Google Scholar]

6. Souwalak P, Nongyao P, Vatcharin R, Metta O. Antifungal activity from leaf extracts of Cassia Alata L,Cassia fistula, and Cassia tora L. Journal of Science and Technology2004; 26(5):741-748.

7. Marjorie MC. Plant products as antimicrobial Agents, Clinical Microbiology Reviews 1999;12(4): 564-582.

8. Mahady GB. Medicinal plants for the prevention and treatment of bacterial infections. Current pharmaceutical design. 2005 Jul 1;11(19):2405-27.

9. Timothy SY, Wazis CH, Adati RG, Maspalma ID. Antifungal activity of aqueous and ethanolic leaf extracts of Cassia alata Linn. Journal of Applied Pharmaceutical Science. 2012 Jul 30;2(7):182-5.

10. Verma RK, Kumari P, Maurya RK, Kumar V, Verma RB, Singh RK. Medicinal properties of turmeric (Curcuma longa L.): A review. Int. J. Chem. Stud. 2018;6(4):1354-7.