



Formulation and Evaluation of Antibacterial paper soap.

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Abstract

Skin infections related to bacteria are most commonly found in surrounding environment. In such cases the significant attention to provide curative actions and maintenance of proper health hygiene is required. Some of the natural extracts obtained from herbal plants possess antibacterial activity. The paper soap is most used handwash preparation in this article formulate antibacterial paper soap with eucalyptus oil and evaluate their parameter and in-vivo antibacterial activity. However, aroma therapy is pleasant, eco-friendly and reduced number of side effects. The study indicates that the evaluated paper soap contain may be antimicrobial properties and this can contribute the curative and preventive actions for skin infections caused by bacteria if well balanced quantity of natural excipient and reagents to target particular contribute organisms and packaged with proper guidance for utilization and storage.

Key word: Soap paper, Anti bacterial, Eucalyptus oil

1.0 INTRODUCTION ⁽¹⁻²⁾

Health hygiene is very essential due to increasing number of diseases caused by microorganisms. Since ancient time, soap is a fundamental part of human health hygiene. In the modern era bath soap that is available in the market are mainly of two types: solid soap and liquid soap. Selection of soap by people depends on various factors one of which is ease of carrying. Paper soap itself is an innovation to the soap formulation which is printed and moulded as slender as paper. To keep us the essential cleanliness while traveling, it is very imperative to have soaps handy. This is the place where travel soaps populated as paper soaps become an integral factor. When comes in contact with water it easily gets wet and produce foam similar to ordinary soap and gels. Paper soap is

produced on big industrial scale majorly in China. The paper soap is made from variety of materials, such as methyl paraben, propyl paraben, glycerine, carbomer. Until now there are very a smaller number of paper soap preparations available from natural ingredients/agents such as eucalyptus oil, neem oil, coconut oil which are safe and healthy for topical use.

1.1 Advantages of paper soap

- Light weight
- Ready to use
- Gentle on skin
- Ease of carrying
- Earth friendly
- Low cost
- Biodegradable, compostable

2.0 PLANT PROFILE⁽³⁻⁵⁾

2.1 Eucalyptus

- **Phyto-pharmacological overview of plant- "Eucalyptus"**



Figure 1 PLANT EUCALYPTUS GLOBULUS

NAME: *Eucalaptus globulus*

FAMILY: Myrtaceae

Table No: 1 Morphology of *Eucalyptus globulus*

Habit	:	vary from shrubs to tall trees.
Habitat	:	<i>Eucalyptus globulus</i> can grow on a variety of substrates, but it is especially common and widespread on soils derived from granite and grano-diorite rocks.
Leaves	:	Glossy, dark green, thick and leathery leaves. Gray wax like thicker substance cover bottom surface of the leaf.
Branches	:	Square shaped and wing.

Bark	:	Smooth, white to cream in color
Flowers	:	unique white flowers with many stamens, arise from the axis of flattened stalks.
Wood	:	Dense solid wood, water resistant
Roots	:	Mostly consists of strong lateral roots
Fruit	:	fruit is a hard in nature and shaped as woody globose capsule. It is 2-2.5cm in size. It is having dark brown seeds.
Seed	:	Present inside the fruits or capsules in association with chaff. Pre-treatment is not required for germination
Flowering	:	Tallest flowering plant on earth. Flowering observed from December to May

3.0 PREPARATION OF PAPER SOAP

FORMULATION:

Eucalyptus oil	1%
Sodium lauryl sulphate	1%
KOH	0.2ml
Glycerin	2.5ml

PROCEDURE: 10ml of eucalyptus oil was measured and transferred into small beaker. Into it 1% of sodium lauryl sulphate was weighed and added with continuous stirring to form solution. Glycerin was added to maintain the viscosity of the solution. The prepared solution was then sonicated using bath sonicator. pH of above solution is measured. pH should be in the range of 9-10. Then the pH was adjusted with 0.1N KOH. The final adjusted solution was applied onto the whatman filter paper of appropriate size. Then the paper soap was kept in sunlight for drying until it gets dried. The prepared paper soap was then evaluated.

4.0 EVALUATION TEST FOR PAPER SOAP^(1,2)

4.1 Physicochemical tests:

SR NO.	Parameter	Test	Observation
1.	Color	By visually	Light Yellowish
2.	Odor	By smell	Aromatic
3.	Texture	By touch	Smooth
4.	Volatile oil test	Sudan III + eucalyptus oil	Red Color

4.2 pH: pH of paper soap solution was measured using pH meter. Required pH (9-10) was adjusted by 0.1N KOH solution.

4.3 Foam height: 0.5gm of sample of soap solution was taken, dispersed in 25ml distilled water then, transferred it into 100ml measuring cylinder; volume was make-up to 50ml with water. Then the cylinder was shaken 5 times until the foam is produced. The cylinder was allowed to stand till aqueous volume measured up to 50ml and measured the foam height, above the aqueous volume.

4.4 Sensitivity test: It is done by “patch test”. Apply product on 1cm patch of chicken skin, if no inflammation or rashes then it is considered as free from sensitivity.

4.5 Foam stability test: Foam stability is the consistency of the amount of foam produces by paper soap. The resulting foam on paper soap is smoother than the regular soap. The foam is stable in the presence of glycerine and glycerine do not have any significant effect on foam stability.

4.6 Paper spread-ability: A pinch of product should be easily spreadable on paper.

4.7 Stability test: Stability study was carried out for the formulation by providing different temperatures. I.e., at room temperature 37 degree Celsius and refrigerator 2-8 Celsius. Sample was checked on different time interval and analysed for visual appearance, pH etc.

4.8 Antibacterial Test: There was study conducted on antibacterial activity of paper soap. Microbial study was done using microorganisms. For checking the effectiveness of the paper soap uses the bacterial was grown in the culture media the soap strip was placed in the surface of the agar media then it was placed in the incubator for about 24 hrs at 30 c The herb diffuses out of the strip into the agar an the bacterial activity was recorded.

5.0 Conclusion

To conclude, the prepared antibacterial paper soap formulation confirm that eucalyptus oil is an vast source for many medicinal important chemicals such as 1,8-cineole, α terpinolene, α -terpinyl acetate responsible for number of pharmacological activities like antibacterial, antidiabetic, anti-inflammatory, antioxidant, antifungal. However aroma therapy is pleasant, eco -friendly and reduced number of side effects. In present review we have made an attempt to assemble the description, physicochemical, application and information on antibacterial eucalyptus oil paper soap.

6.0 Reference

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