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Formulation and Analysis of Herbal Face Wash Using Luffa Cylindrica Seeds Oil Extract As A Soap Base

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ABSTRACT

Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbal formulations have growing demand in the world market. The present work deals with the development & evaluation of the herbal anti-acne face wash containing aqueous extract of Luffa cylindrica seed oil, neem leaves (*Azadirachta indica*), Pumpkin. Although various topical herbal formulations for acne are available in the market, we propose to make pure herbal formulation without using any synthetic soap. The plants have been reported in literature having good anti-microbial, anti-oxidant & anti-inflammatory activity also and saponins present in the Luffa cylindrica seeds used as a base to form the soap. Prepared formulations were evaluated for various parameters like colour, appearance, consistency, washability, pH & spreadability. The formulation was compared with the marketed preparation.

Keywords: Face wash, Luffa cylindrica seed oil, saponins, soap, neem leaves, antimicrobial activity

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INTRODUCTION

Acne vulgaris is an extremely common disorder of skin (pilocebaseous unit) that affects virtually all individuals at least once during life. The incidence of acne peaks at teenage, but substantial numbers of men and women between 20-30 years of age are also affected by the disorder.

Acne may be classified as comedonal, papular, pustular, cystic, and nodular. Comedonal acne is non-inflammatory and divided into two types: whiteheads and blackheads. White heads (closed comedo) present as fresh or white colored, raised bumps whereas blackhead (open comedo) present as open pores containing dark colored skin roughage consisting of melanin, sebum, and follicular cells. Papules appear as red, solid, elevated lesions often less than 5 mm in diameter. Pustules are circumscribed skin elevations containing purulent material. Cysts and nodules are solid, elevated lesions involving deeper dermal and subcutaneous tissue. Cysts are less than 5 mm in diameter whereas nodules exceed 5 mm.

The pathogenesis of acne involves multiple physiological factors. These include follicular hyper proliferation; increased sebum production due to higher androgen levels and colonization of organism, *Propionibacterium acnes*. Novel concepts have emerged to help better understand its pathogenesis; these include variations in target cell sensitivity, biological markers, neuro-endocrine, genetic, and environmental factors. Plenty of herbal as well as synthetic ingredients are reported to have remarkable beneficial effect on acne vulgaris. They may have different mechanisms like,

- (a) Control sebum secretion,
- (b) Antibiotics which inhibit *Propionibacterium acnes*, the main causative organism of acne, (c) Keratolytic which removes the keratin layer and prevents the trapping of sebum under the skin, (d) Anti-inflammatory which prevents the worsening of condition due to inflammation or redness etc.

MATERIALS AND METHOD

List of ingredients

Ingredients	Parts used	Property	Qty (%)
Extract of <i>Luffa cylindrica</i>	Seed	Used for soap formation	1
Extract of neem	Leaves	Kills acne causing bacteria	1
Extract of Pumpkin	Fruit	Juvenile acne, pimples, blackheads, vit.E	1
Carbopol 940	-----	Gelling agent	1
Methyl paraben	-----	Preservative	0.2
Propyl paraben	-----	Preservative	0.1
Triethanolamine	-----	Neutralizer	2
Propylene glycol	-----	Humectant	2
Sodium lauryl sulphate	-----	Foaming agent	2
Distilled water	-----	Vehicle	QS
Rose water	Flower	Perfume	QS

METHODS

Collection

Leaves of neem were collected from the from the Field . Fruits of Pumpkin, *Luffa cylindrica* Seed, rosewater were collected from the local market of Sangli

Preparation of Extracts

Luffa cylindrica Oil Extraction

Extraction of oils from seeds is carried out using Soxhlet extraction apparatus. A 70 g of the powdered seed sample was put into a porous thimble and placed in a Soxhlet extraction apparatus, using 150 cm³ of n-hexane (with boiling point of 40 – 60.0⁰) as extracting solvent for 6 h. The oil was obtained after the solvent was removed under reduced temperature and pressure and refluxing at 70⁰ to remove excess solvent from the extracted oil. The oil was then stored in freezer at -2 ⁰C for subsequent physicochemical analyses.

Leaf extract of neem by Methanol

50g of dried leaf powder were taken in a separate container. To this 250ml of methanol was added and kept for 24 h with periodic shaking then filtered and the filtrate was collected. The procedure was repeated three times with fresh volume of methanol. The filtrates were pooled.

Pumpkin extract

Fruits of Pumpkin were crushed to make powder. Desired quantities of powder drugs were weighed and added to the conical flask containing volume of 1:1 water-ethanol mixture. Contents were allowed to boil on water bath under reflux condition for about 30 min. Contents were filtered out and residues were again boiled with volume of 1:1 water-ethanol mixture on water bath under reflux condition for about 15 min. Contents were filtered out and filtrates were combined. Filtrate was allowed to evaporate in evaporating pan until the desired concentration of the extract was obtained.

Preparation of gel

A small quantity of water was added with preservatives, propylene glycol and sodium lauryl sulphate were dissolved well. To the above solution carbopol was added little by little and stirred well until a gel like dispersion was obtained .To this the extracts were added one by one to get a complete gel like consistency .Then triethanolamine was added finally.

The prepared face wash gel was evaluated for various parameters as follows

Washability-Formulations were applied on the skin easily remove by washing with water were checked manually.

pH-pH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant temperature.

Colour: The colour of the face wash gel was checked visually.

Odour: The formulation was evaluated for its odour by smelling it.

Consistency: It was determined manually.

Viscosity:-Viscosity of the gel was determined using Brookfield viscometer. The values obtained for the sample and for water were noted.

Spreadability: The spread ability of the gel was found manually by applying the gel on the skin with hand or finger gentle rub which easily spread through the face..

Foamability: Small amount of gel was taken in a beaker containing water. Initial volume was noted, beaker was shaken for 10 times and the final volume was noted.

Antimicrobial Studies of Face Wash Gel-The screening of anti-microbial efficacy of the formulated Herbal Gel Based hand wash was aseptically performed on by using Cup Plate Technique.

RESULTS AND DISCUSSION

The present study was carried out to formulate *Luffa cylindrica* seeds extract based Face wash using gel base as carriers. The formulation was prepared by using generally approved excipients that are compatible with any similar Face cleansing formulations except soap. The saponis present in the seeds reacts with the SLS to form the soap. It was organoleptically evaluated to ensure product stability and performed in-vitro antimicrobial test to prove its efficacy to act against infectious bacteria collected from volunteers.

Parameters

Color and Physical Appearance-Faint green in colour with a translucent appearance.

Fragrance-Rose

Table 1: The result of Chemical parameter.

S. No.	Parameters Tested	Results
1	pH of solution	7.66
2	Viscosity (cps)	56c Pascal's
3	Foam Height	7 ml
4	Spreadability (gm-cm/sec)	11.31
5	Washability	Good
6	Consistency	Semi-solid

Table 2: Antimicrobial activity of extract and Herbal Face Wash

Zone of Inhibition (mm)				
Test of microorganisms	Luffa cylindrica seed extracts	Neem extracts	Formulation	Standard
1. Staphylococcus aureus	9	8.5	10	11.1
2. Escherichia coli	10	10.1	9	10
3. Bacillus subtilis	8	9	10	11

Staphylococcus aureus**Bacillus subtilis****Escherichia coli****Figure 1: Antimicrobial activity of extract and Herbal Face Wash****CONCLUSION**

Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbal formulations have growing demand in the world market. It is a very good attempt to establish the herbal face wash containing aqueous extracts of neem leaves, Luffa cylindrica seed extracts, Pumpkin extract without any synthetic soap. This study revealed that the developed herbal formulation was better.

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