



# Formulation And Evaluation of Poly Herbal Face Wash Gel

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## Abstract:

The study indicated the beneficial effect of herbal ingredients, such as neem and turmeric, in the prevention and reduction of mild-to-moderate acne with no side effects. The face wash gel was formulated using extracts of *Azadirachta indica* (Neem), *Curcuma longa* (Haldi), Nutmeg, *Aloe berbadandis* (Aloe Vera), Citrus limon (Lemon), and Honey. The gel was non-irritant, stable, and possessed anti-acne activity. The study also emphasized the importance of cleansing and oil removal for the prevention of acne. It highlighted the adverse effects of synthetic medicines in acne treatment and the effectiveness of herbal-based compositions for cleansing and oil removal. Overall, the formulation and evaluation focused on utilizing herbal ingredients to create stable and effective products for acne treatment, emphasizing the importance of natural ingredients and their potential benefits for skincare.

**Key words:** *Azadirachta*, *longa*, anti-acne, potential.

## 1. Introduction:

The skin is the largest organ of the body, accounting for about 15% of the total adult body weight. It performs many vital functions, including protection against external physical, chemical, and biologic assailants, as well as prevention of excess water loss from the body and a role in thermoregulation.

### 1.1: Layers of Skin:

1. Epidermis - The epidermis is an elastic layer on the outside that is continually being regenerated. It includes the following:

- a) Keratinocytes - the main cells of the epidermis formed by cell division at its base. New cells continually move towards the surface. As they move, they gradually die and become flattened.
- b) Corneocytes - the flattened dead keratinocytes that together make up the very outer layer of the epidermis is called the stratum corneum or horny layer. This protective layer is continually worn away or shed.
- c) Melanocytes – produce the pigment melanin that protects against UV radiation and gives skin its colour.

2. Dermis-The dermis is the inner layer that includes the following:

- a) Sweat glands – produce sweat those travels via sweat ducts to openings in the epidermis called pores. They play a role in temperature regulation.
- b) Hair follicles – are pits in which hairs grow. Hairs also play a role in temperature regulation.
- c) Sebaceous glands – produce sebum (an oil) to keep hairs free from dust and bacteria. Sebum and sweat make up the 'surface film'.

3. Subcutaneous tissue-The deeper subcutaneous tissue Is made of fat and connective tissue. <sup>(1)</sup>

### 1.2 Introduction of Facewash-

A facewash is a facial care product that is used to remove makeup, dead skin cells, oil, dirt, and other types of pollutants from the skin of the face. This helps to unclog pores and prevent skin conditions such as acne. A facewash can be used as part of a skin care regimen together with a toner and moisturizer. Face wash is the products which are used to cleanse face without drying it out. Face wash is also commonly known as “cleanser”.

Face wash are made from fresh herbs or end result to enhance the skin health and decorate beauty. Face wash improves stream and clean out the complete face. Preventing acne regularly calls for a delicate balance of moisturizing and oil control, exfoliation and cellular renewal and a staple in any skincare routine, otherwise involve washing your face two times in keeping with day once in the morning and once at night. <sup>(2)</sup>

### 1.3 Types of Face Wash formulations:

- a) Gel Face Wash
- b) Cream face wash
- c) Foam face wash
- d) Clay cleansers
- e) Oil-based cleansers

### 1.4 Properties of Facewash Gel:

The exfoliation accelerates the blood circulation and promotes skin regeneration and rejuvenation.

- Facial pores and Oily skin is caused by over secretion of sebum by sebaceous glands which clogs the makes the skin oilier.
- It should be stable and should have a good appearance.
- It should soften on application to the skin.
- It should spread easily without dragging.
- During application it should not have oily or greasy feel.
- After evaporation of water the cream.

#### • Advantages of Face Wash Gel:

1. It helps to remove dead skin cells that helps new skin cells replace old one
2. It helps to keep skin fresh and healthy.
3. It makes the skin to look radiant.

4. The mixture of dead skin cells and excessive oil clog pores, which can lead to acne white heads, blackheads and total weary appearance. Exfoliating the pores regularly, avoids all the above skin problems.

## 2. Plant Profile

S.No.	Plant name	Uses	Picture
1	Neem ( <i>Azadirachta indica</i> )	<ul style="list-style-type: none"> <li>• astringent, disinfectant</li> <li>• Leaves and oil are used as antiseptics.</li> <li>• It is used to promote wound healing, dry skin, itching &amp; wrinkles</li> </ul>	
2	Turmeric ( <i>Curcuma longa</i> or <i>Curcuma domestica</i> )	<p>It gives antibacterial and anti-inflammatory properties.</p> <p>It helps to clean and purify the skin.</p>	
3.	Liquorice ( <i>Glycyrrhiza glabra</i> )	<p>It is used as skin brightener.</p> <p>It is used to hide sun damage</p> <p>Treat skin condition and ease inflammation.</p>	
4.	Lemon ( <i>Citrus limon</i> and <i>Citrus medica</i> )	<p>It is used in acne treatment.</p> <p>It is used to remove excess oil, dirt &amp; make up.</p> <p>It is used as anti-microbial</p>	
5	Nutmeg ( <i>Myristica fragrans</i> <i>houtt</i> )	<p>It is used to reduce hyperpigmentation</p> <p>To get a healthy and glowing skin.</p>	

6	Aloe vera ( <i>aloebarbadensis.</i> )	It used to clean the pores and reduce oil buildup. It improve and nourish the damaged skin.	
7	Honey (Nectar ambrosia)	<ul style="list-style-type: none"> <li>• It is used as antioxidant</li> <li>• It is used as antibacterial agent</li> </ul>	

### 3. Material And Methods

#### Material

##### a. Active Herbal Ingredients

- Neem
- Turmeric
- Liquorice
- Lemon
- Honey
- Nutmeg
- Aloe vera

##### b. Chemicals

- Carbopol 940
- Sodium lauryl sulphate
- Triethanolamine

### METHODS

#### Collection:-

Powder of Neem, Turmeric, Liquorice & Nutmeg and Lemon, Honey, Aloe-vera, Rose water were collected from the local market.

## Preparation Of Extracts

The selected herbs were extracted using solvent like water to obtain the active phytochemicals. The extracts were then standardized and tested for parameters like total polyphenol content.

## 4. Formulation Of Herbal Face Wash Gel

### Procedure

- 1) Carbapol 940 was dispersed in distil water and the beaker was kept aside to swell the carbapol 940 to form gel.
- 2) Distilled water and sufficient quantity of methyl paraben and propylparaben was taken and dissolved by heating on water bath.
- 3) The solution was cooled and sodium lauryl sulphate was added.
- 4) Further sufficient extract quantity was mixed to the above mixture and carbapol 940 gel was added to this solution along with continuous stirring.
- 5) Then drop wise triethanolamine was added to the adjustment of required skin pH and to obtain the gel at required consistency.

S.No.	Ingredients	Quantity in Formulation		
		F1	F2	F3
1.	Neem extract	9ml	7ml	5ml
2.	Turmeric extract	3.6 ml	5ml	2ml
3.	Liquorice extract	4.5 ml	2ml	5ml
4.	Lemon juice	4.5 ml	2ml	5ml
5.	Honey	8 ml	7ml	3ml
6.	Nutmeg extract	4.5 ml	10ml	9ml
7.	Aloe vera	8.7 ml	10ml	9ml
8.	Carbopol 940	2.7 g	3g	5g
9.	Sodium laryl sulphate	4.5g	3g	7g

**Table 1: Ingredients and Formulations**

## 5. Evaluation Parameters of Prepared Formulation

### Physical evaluation:

Physical parameters like colour, appearance and consistency was checked visually.

### Washability

Washability of prepared formulations was checked manually. Formulations were applied on the skin and washed with water and checked manually

### pH:

pH of 1% aqueous solution of the prepared formulations were measured by using a calibrated digital pH meter at constant temperature.

### Spreadability:

Spreadability denotes the extent of area to which the gel readily spread on application to skin or the affected part. Two sets of glass slides of standard dimensions were taken. The herbal gel formulation was placed over one of the slides. The other slide was placed on the top of the gel, such that the gel was sandwich between the two slides in an area occupied by a distance of 6 cm along the slide. 100g weight was placed upon the upper slide so that the gel between the two slides was pressed uniformly to form a thin layer. The weight was removed & the excess of the gel adhering to the slides was scrapped off. The two slides in position were fixed to stand without slightest disturbance & in such a way that only the upper slide to slip off freely by the force of weight tied to it. A 20gm weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 6 cm<sup>7</sup> separated away from the lower slide under the influence of the weight was noted.

### Irritancy test

The gel was applied on left hand dorsal side surface of 1 sq. Cm. And observed in equal intervals upto 24 hrs for irritancy,redness and edema.

## 6. Results And Discussion

Herbal gel was prepared by emulsification technique and optimized for various formulation variables. Finally the gel was prepared using carbopol dissolve in distilled water and extract of various herbs mixed in it. The prepared gel was evaluated by various parameters like physical appearance, pH, washability and spreadability. The results of evaluation parameter shown in the Table.2

S.No.	Evaluation parameter	Formulation		
		F1	F2	F3
1	Colour	Reddish brown	Reddish brown	Reddish brown
2	Appearance	Semi solid	Semi solid	Semi solid
3	Consistency	good	good	good
4	Washability	excellent	excellent	excellent
5	pH	6.3	6.1	5.6
6	Spreadability	good	good	good
7	Irritancy	No irritation	No irritation	No irritation

**Table.2: Evaluation of prepared formulation**

## 7.CONCLUSION

Skin is the largest and primary protective organ of our body. Healthy and glowing skin need almost care. The first step in skin care is cleansing, for cleansing of skin many different type of cleanser or face wash are available in the market but most of the face wash available in market are made up of synthetic chemicals which gives many side effects. Herbal formulations have growing demand in the world market because they are safer with fewer side effects. It is a very good attempt to establish the herbal face wash containing aqueous extracts of neem leaves, turmeric rhizomes, liquorice root, seed of nutmeg, aloe vera, honey and juice of lemon. This study concludes that the developed herbal formulation of F3 was comparatively better than other formulations. Because formulation F3 gives better effect and evaluation parameters of F3 is in satisfactory range.

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