



# “Formulation And Evaluation Of Herbal Anti- Acne Face – wash”

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## Abstract-

The demand for herbal formulations is very significant worldwide. The human skin is the organ most susceptible to infections and germs that cause disease. It is also the bodily component primarily responsible for sweating. It requires a lot of attention and defense as a result. Hormone imbalances and abnormalities in internal components can cause a variety of skin problems throughout puberty. Acne is the most common type of skin disease. Face and neck are the areas most frequently affected. Eliminating oil from the face serves as a preventive step. This has to be washed and cleaned properly. Currently on the market are antibiotic gels, anti-acne washes, and masks that contain synthetic medications. The current study focuses on the creation and assessment of a herbal face wash that combats acne. The product includes an aqueous extract of neem leaves (*Azadirachta indica*), rice extract, turmeric (*Curcuma longa*), orange peel, and a hydro-alcoholic extract of nutmeg fruit (*myristica fragrance*). While there are several topical herbal formulations for acne on the market, our suggestion is to create a pure herbal formulation devoid of any synthetic ingredients. The plants' strong antioxidant, anti-inflammatory, and anti-microbial properties have been documented in the literature. Different quantities of tragacanth gum were used to make the formulation batches, or F1 through F3. A number of characteristics, including colour, appearance, consistency, washability, pH, and spreadability, were assessed for the prepared formulations (F1 to F3). A batch of optimized formulation was compared with the commercially available version. Batch F2 was determined to be the best for every parameter across all formulation trials. Making an attempt to create a natural face wash with neem leaf, turmeric root, and nutmeg fruit extract in water was excellent.

## Introduction –

Over 90% of people will at some point in their lives have acne vulgaris, a very common skin condition known as a piloosebaceous unit. Acne is most common in teenagers, but it also affects a significant portion of men and women in their 20s and 30s (1). It is possible to categorize acne as nodular, pustular, cystic, comedonal, and papular. Two forms of comedone acne—blackheads and whiteheads—are non-inflammatory. A closed comedone is characterized by elevated, fresh-looking bumps that are white in color, while an open comedone is characterized by pores that contain dark skin roughage made up of follicular cells, oil, and melanin. More frequently than not, papules are less than 5 mm in diameter and appear as red, firm, raised lesions. Pustules are confined elevations of skin that contain purulent matter. Including deeper dermis and subcutaneous tissue, cysts and nodules are raised, solid lesions. When compared to nodules, cysts have a diameter of less than 5 mm.

Acne is caused by a variety of physiological causes. Propionibacterium acnes and Staphylococcus epidermidis colonization, elevated sebum production brought on by elevated testosterone levels, and follicular hyperproliferation are a few of them. In (4) In order to gain a deeper understanding of its pathophysiology, new concepts have surfaced. These include variations in the sensitivity of target cells, biological markers, neuroendocrine, genetic, and environmental factors. It has been claimed that a variety of synthetic and herbal substances significantly improve acne vulgaris. (3,5) They might use distinct mechanisms, such as

- regulating the secretion of sebum.
- Antibiotics that block the growth of Staphylococcus epidermidis and Propionibacterium acne primary acne-causing organism.
- Keratolytic, which eliminates the keratin layer and stops sebum from being trapped beneath the skin.
- Anti-inflammatory: This stops inflammation, redness, etc. from making a problem worse.

For the purpose of treating acne, a wide range of formulations containing active medicinal substances are on the market. The following topical preparations are presently on the market: Gel, Cream, Lotion, Cleanser or Face Wash, Pack or Mask for the Face Curcuma longa, nutmeg (Myristica scent, Myristicaceae), and neem (Azadirachta indica, Meliaceae) are said to have a particularly positive impact on acne because of the chemical components' anti-microbial, anti-inflammatory, and antioxidant properties.(1)

## Materials –

### List of ingredients –

#### (1) Turmeric –

Botanical name-

(Curcuma longa )

Uses-

- It has powerful anti-inflammatory effects trusted Source .
- Strong antioxidant
- Antibacterial
- Antifungal
- Adds glow on the face

**(2) Neem leaves –**

Botanical name –

(Azadirachta indica)

Uses-

- Antifungal
- Antibacterial
- Antiseptic
- Anti-inflammatory
- Highly beneficial for oily skin

**(3) Honey –**

Uses-

- Light humectant and use as a thickening agent in the
- Helps balance the bacteria on skin
- Honey speeds up your skin cells' healing processes.
- Honey is also a natural exfoliator, which means applying it to your face takes off dry, dull skin and reveals new skin cells underneath.

**(4) Tragacanth gum-**

Uses-

- It is used as a non-toxic thickener and stabilizer
- Beneficial for your skin health as it delays the development of wrinkles and fine lines.

**(5) Lemon juice –**

Uses –

- Used as natural pH adjuster in cosmetics
- To lighten skin
- Treatment for acne.
- Lemons also have antimicrobial effects, which may help tame Propionibacterium acnes bacteria that lead to inflammatory acne.
- Lemon juice can get rid of dead skin cells

**(6) Rice water –**

Uses –

- It assists in skin brightening, depuffing the eyes, and making the skin soft and supple.
- Rice water also works on the signs of aging like hyperpigmentation, reverses sun tan, boosts hydration, and gives you glass-like skin.

**(7) Orange peel extract –**

Uses –

- Anti – oxidant
- Help fight early signs of ageing like wrinkles, fine lines, dark spots, sagging skin
- Orange-peel properties can maintain the natural balance Of skin oils and tighten the skin by absorbing excess oils And removing dead skin cells.

**(8) Nutmeg –**

Botanical name-

*Myristica fragrans* Houtt

Uses –

- It Can help to improve the appearance of fine lines, wrinkles, and uneven skin tone.
- Antibacterial
- Antiseptic

**(9) Rose water –**

Uses-

- It has antibacterial and antiseptic Properties which eventually cure acne
- Used as a solvent ,

**(10) Green tea –**

Botanical name-

*Camellia sinensis*

Uses-

- Helps to reverse sun damage and fades dark spots, pimple spots, and other skin irritations caused by environmental aggressors.
- Help reduce sebum secretion, which can lead to acne.

## Methods –

### (1) Collection of ingredients –

Leaves of the neem were collected from botanical garden of vncop lakhewadi. fruits of orange peel, green tea, rhizomes of turmeric , rice and seeds of nutmeg were collected from the local market.

### (2) Extract preparation –

Leaves of the neem , rhizomes of turmeric , orange peel, were kept for shade drying for 1 day at room temperature and then grinded into small pieces by using grinder . Seeds of nutmeg were crushed to make powder . And rice were rinses with water for 2 times then desired quantities of herbal drugs weighed and each drug is macerated with the Rose water in the beaker . And this mixture is kept for 3 days in beaker with constant stirring . (2)



### (3) Filtration of extract-

After 3 days contents were filtered out by simple filtration . Filtrate were collected separately in vessels .



#### (4) Evaporation –

Evaporation was done by using heating mantle . Filtrates were allowed to evaporate in heating mantle at 60°C temperature until the desired concentration of the extract was obtained.

#### (5) Formulation of face wash-

Different batches of formulations were made in accordance with ingredients. Accurately weighing the required concentration of the gelling ingredient, tragacanth gum , was then mixed with moderate stirring to prevent air entrapment in hot rose water (not to exceed 60°C; 50% of the batch size), and left to soak for the entire night. With gently shaking, the necessary amount of honey was combined with the desired amount of lemon juice to dissolve it. The leftover rose water was combined with the desired amount of concentrated herbal extracts, and the mixture was gently stirred in with the honey mixture. This was then combined with the gel formulation that had been soaked earlier. The prepared formulas were placed into an appropriate container and given the appropriate label. (1,2)

**Table 1: composition of developed formula**

Sr.no	Ingredients	Quantity taken for 10 gm gel		
		F1	F2	F3
1	Neem extract	2ml	2ml	1.5ml
2	Turmeric extract	0.3ml	0.25ml	0.2ml
3	Rice extract	2 ml	2ml	2 ml
4	Orange peel extract	2 ml	1.5ml	2 ml
5	Green tea extract	2 ml	2ml	2ml
6	Lemon juice extract	0.15 ml	0.2 ml	0.15 ml
7	Nutmeg extract	2 ml	2ml	2 ml
8	Honey	2 ml	2 ml	2 ml
9	Tragacanth gum	Q.s	Q.s	Q.s
10	Rose water	Q.s	Q.s	Q.s

#### Marketed formulation –

Himalaya purifying neem face wash was purchased from local market of lakhewadi for comparison.

#### Evaluation of formulation –

##### Physical evaluation –

A visual evaluation was done for physical characteristics such color, appearance, and uniformity.

##### (1)PH-

A calibrated digital pH meter was used to measure the pH of the formulation's 1% aqueous solution at a steady temperature.(5)

##### (2)Washability-

Skin treatments were applied, and the degree and simplicity of water washing were manually assessed.

### (3) Spreadability –

The concept of “spreadability” refers to how easily the gel spreads across the skin or afflicted area after being applied. A gel formulation’s spreading value affects how bioavailable it is efficiently [2]. The spreadability is measured in terms of the number of seconds it takes for two slides to separate from the gel that is positioned in between them when subjected to a specific load. Better spreadability results from separating two slides in less time. Standard-sized glass slides were taken in two sets. Over one of the slides was the herbal gel mixture. The gel was sandwiched between the two slides in a region that took up six centimeters along the slide when the other slide was positioned on top of the gel. 100 grams in order to push the gel between the two slides uniformly to form a thin layer, weight was applied to the upper slide. The weight was taken off, and any extra gel that was sticking to the slides was scraped off. The two slides were positioned so that only the upper slide could slip off freely due to the force of the weight attached to it and that the other slide would remain in place without any disturbance. A 20g weight was cautiously fastened to the upper slide. The duration of the upper was observed that the weight caused the slide to travel 6 cm<sup>7</sup> apart from the bottom slide. The trial was conducted three times for both the marketed and designed gels, as well as the average calculation time. (1,2)

Spreadability was calculated by using the following formula,

$$S=M \times L/T$$

Were, S- Spreadability

M- Weight tied to the upper slide (20gm).

L- Length of the glasss (6.5cm).

T- Time in sec

### Results and discussion –

The first table presents the results of the evaluation. The marketed formulation had a green color, however the formulation was orange in color. The consistency of formulas F1, F2, and F3 was determined to be semisolid. It was discovered that every composition was uniform and easily washable. The pH of each formulation was slightly alkaline, in line with the typical physiology of the skin.

**Table 2 : Assessment of formulations**

Formulation/Batch code	Colour	Consistency	Washability	PH	Spreadability
Marketed	Green	Semi- solid	Good	5.8	5.909
F1	Orange	Semi- solid	Good	6	4.300
F2	Orange	Semi- solid	Good	5.5	5.808
F3	Orange	Semi- solid	Good	6	2.862

Out of all the formulation batches, the spreadability of F1, F2, is quite good. The F2 formulation batch exhibited a higher degree of spreadability in comparison to the F1 and F3 formulation batches. Additionally, it was discovered that the parameters of the F2 batch produced findings that were nearly identical to those of the marketed formulation; as a result, the F2 batch was approved.

## Conclusion-

Because natural medicines are thought to be safer and have less adverse effects than synthetic ones, they are more widely accepted. The demand for herbal formulations is rising on the global market. Establishing a herbal face wash with aqueous extracts of liquorice root, nutmeg seed, turmeric rhizomes, and neem leaves is a very good start. This investigation showed that batch F2's created herbal formulation performed comparably well to other formulations.

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