

Formulation and evaluation of Herbal Paraben Free Face Wash

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ABSTRACT

Acne vulgaris is an extremely common disorder of skin [piloosebaceous 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.[1]

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

The pathogenesis of acne involves multiple physiological factors. These include 1). Follicular hyper-proliferation, 2).

Increased sebum production due to higher androgen levels & colonization of organism, 3).

Propionibacterium acnes & staphylococcus epidermidis.[4]

Novel concept have emerged to help better understand its pathogenesis, these includes variation in target cell sensitivity, biological markers, neuro-endocrine, genetic, & environmental factors. Plenty of herbal as well as synthetic ingredients are reported to have remarkable beneficial effect on acne vulgaris.[3-5] They may have different mechanism like,

- Control sebum secretion.
- Antibiotics which inhibits Propionibacterium acne & Staphylococcus epidermidis, the main causative organism of acne..

- Keratolytic which removes the keratin layer & prevents the trapping of sebum under the skin.
- Anti-inflammatory which prevents the worsening of condition due to inflammation or redness etc.

Numbers of formulations are available in the market with variety of active pharmaceutical ingredients for the treatment of acne. Topical formulations, available in the market are as follows: Gel, Cream, Lotion, Face wash or cleanser, Face pack or mask. Neem (Azadirachta indica, Meliaceae), turmeric (Curcuma longa) & nutmeg (Myristica fragrans, Myristicaceae) are reported to have very beneficial effect on acne due to anti-microbial, anti-inflammatory & antioxidant activities of different chemical constituents.

Face skin is the major part of the body, which indicates the health of an individual. It consists of materials such as amino acids, lipids and carbohydrates etc so that a balanced nutrition is required for the skin to keep it clear glossy and healthy, it deals with the formulation and characterization of cosmetic herbal face wash preparation. In ancient times women are very conscious about their beauty and started to dress themselves because they wanted to increase their own beauty.[6]

Even today, people especially in rural areas, and hilly region select the natural remedies like plants extracts for cosmetics purposes like neem, orange rose. Herbal cosmetics are products which are used to purify and beautify the skin. The main advantage for using an herbal cosmetic is that it is pure and does not have any side effects on the human body men have rough skin and when they don't take sufficient care then the skin turns dark due to over exposure of the sun.[2] In this article we share home best homemade face packs and face mask to whiten the skin naturally for men's and

women skin. These face packs have natural skin lightening and can be easily prepared at home.[7]

Facial skin is delicate and ordinary soaps can cause to lose moisture. A face wash is a mild cleanser that does the vital job of keeping skin clean, germ free smooth, and fresh and moisturizes the horny layer without any harshness to the skin look younger and energetic. The purpose of face-wash may be to impart cleansing, antiwrinkle effect, Anticancer property, moisturizing effect and fairness of skin.[8]

Keywords: Face wash, Washability, Spreadability, Irritancy test.

I. INTRODUCTION

The herbal drug industry in India is probably the oldest medical care system in the world. The history of herbs in ancient India is so old that the ancient form of herbal healing has even been mentioned in the Vedas, an ancient religious work of the Indians. The ancient herbal healing methods of Ayurveda and Unani deal with the use of herbs and natural products to tackle health conditions. Although herbal medicines would appear to be new for western healers and medical practitioners, the truth is that most prescribed medicines even today contain plant extracts. At present, the countries across the world appreciate this ancient form of medicine and Indian herbal drugs are in good demand resulting in its rapid growth and witnessing almost a thirty percent growth rate annually (Rashmi, 2008). A great increase in the worldwide demand for herbal cures, herbal skin care products and even herbal cosmetics were observed in the recent years.

Skin, being the most exposed part of our body to the pathogens, require protection from skin diseases, especially acne causing bacteria. Acnes are found to be the most common skin problem that 85% of the teenagers face today. They may continue to even adulthood and mostly affect the areas with largest oil glands like face and neck. Acnes are generally characterized by the presence of seborrhea, inflammatory lesions, comedone, excessive sebum production and host to bacteria such as Propionibacterium acnes, Staphylococcus epidermidis, and Malassezia furfur in the follicles. So these microorganisms can be targeted for the potential acne treatment.

The usage of the long-term antibiotics for the treatment makes the organisms develop resistance to the drugs. This adaptation is multi-factorial and depends upon the organism susceptibility to the treatment and host factors like hormones, stress conditions etc. To overcome this

problem, the herbal alternatives for the treatment have been studied. As the herbal extracts cannot be directly used for the treatment, they were modulated and were formulated as poly herbal anti-acne face wash gel. In this study, the gels were formulated using hydroxy propyl methyl cellulose (HPMC) and Carbopol with varying concentrations of the herbal extracts and were tested for their anti-acne efficacy and were examined for the antimicrobial activity against the acne causing microorganisms.

II. MATERIALS & METHODS

Methods

Collection

Leaves of Neem, Aloe vera, Pomegranate were collected from the local area, Glycerine, Citric Acid, Rose Water, Rose Water, Lemon Juice, Citric Acid were collected from the local market of Bhopal.

Preparation of extracts

Leaves of Neem, Aloe vera, Pomegranate, were kept in hot air oven for drying purpose at 45°C and grinded into small pieces by using grinder and convert into powder. Desired quantities of herbal drugs were weighed and each herb macerated with rose water in conical flask. Dried herbs were allowed to mix with rose water by moderate shaking of conical flask for 3 days. Separately After 3 days, contents were filtered out by using simple filtration method and filtrates were collected in vessels separately.

Filtration

Filtration of extract was done by using simple filter muclin cloth and funnel for twotimes.

Evaporation

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

Development of Formulation

Various formulation batches were prepared according to the Table 2. The desired concentration of gelling agent i.e. Aloe vera, Neem, Pomegranate was weighed accurately and dispersed in hot rose water (not more than 60°C; 50 % weight of the batch size) with moderate stirring, avoiding air entrapment and allowed to soak overnight. Desired quantity of

lemon juice was dissolved in desired amount of honey by gentle stirring.

Desired quantity of concentrated herbal extracts were added to the remaining amount of rose water and mixed with above honey mixture by gentle

stirring. This was finally mixed with previously soaked gel formulation. Prepared formulations were filled in a suitable container and labeled accordingly.

| Sr. No | Ingredients | Uses | Qty for 50 ml (f1) batch |
|--------|----------------------|---|--------------------------|
| 1. | Neem Extract | Antibacterial, Antiseptic | 2.5ml |
| 2. | Aloevera leaves | Antibacterial, antifungal and it protects the skin from many infections and also adds glow to the face. | 1.25ml |
| 3. | Pomegranate Leaves | Anti-acne, Natural Antimicrobials from vitamin C | 1.25ml |
| 4. | Glycerine | It is hygroscopic and its solutions are neutral | 1.25ml |
| 5. | Lemon juice Extract | Lighten skin, and natural pH adjuster | 0.5ml |
| 6. | Honey | Thickening agent, emollient, antiseptic and astringent, nutritive. | 2.5ml |
| 7. | Xanthan Gum | Stabilizer and thickening agent | 0.5ml |
| 8. | Rose Water | Solvent | q.s |
| 9. | Sodium laury sulfate | Foaming agent | 1.05 g |
| 10. | Citric Acid | Preservative | 1.05g |
| 11. | Rose Water | antibacterial and antiseptic | q.s |

Comparative evaluation of formulation

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

Physical evaluation

Physical parameters such as colour, appearance & consistency were checked visually.

Washability

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

Colour

The colour of the face wash was checked visually.

pH

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

Viscosity

The viscosity of face wash was determined by using Brookfield Viscometer. The Values Obtained for sample is noted.

Spreadability

Spreadability denotes the extent of area to which the gel readily spread on application to skin or the affected part. The bioavailability efficiency of a gel formulation also depends on its spreading value. The spreadability is expressed in terms of time in seconds taken by two slides to slip off from the gel, placed in between the slides, under certain load. Lesser the time taken for separation of two slides, better the spreadability. 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 sandwiched between the two slides in an area occupied by a distance of 6 cm along the slide. 100gm 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 was separated away from

the lower slide under the influence of the weight was noted. The experiment was repeated three times both formulated gels & marketed gel & the meantime taken for calculation.

Spreadability was calculated by using the following formula,

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

Where,

S- Spreadability

M- Weight tied to the upper Slide L- Length of the glass

T- Time in sec.

Irritancy test

The face wash was applied on face and observed in time interval 1 to 2 hrs.

III. RESULT AND DISCUSSION

The results of evaluation are displayed in Table 3. Formulation was orange in color, whereas, marketed formulation was green in color. Formulation was found to have semisolid consistency. The formulations were found homogenous, easily washable. The formulated face wash has slightly alkaline pH which is compatible with normal physiology

Table 3: Evaluation of formulation:

| Sr. No | Parameter | Marketed Formulation | Formulated Batch (F1) |
|--------|-----------------|----------------------|-----------------------|
| 1. | Colour | Green | Orange |
| 2. | Consistency | Semi-solid | Semi-solid |
| 3. | Wash ability | Good | Good |
| 4. | pH | 6.9 | 6.5 |
| 5. | Viscosity | 1690 cp | 1566cp |
| 6. | Spreadability | 2.16 | 1.72 |
| 7. | Irritation test | Non irritant | Non irritant |



Figure 1: Marketed Face-wash

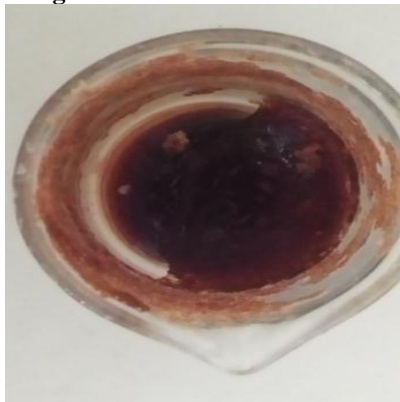


Figure 2: Formulated Face- wash

IV. 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, turmeric rhizomes, liquorice root, and seed of nutmeg. This study revealed that the developed herbal formulation of batch f1 was comparatively better than other formulation.

The herbal face wash is one of the most well recognized acne treatments, herbal face wash not only moisturized, they also used as a cleanser. Preferably they used for oily and dry skin physiology. It provides numerous essential nutrients to the required for maintaining the normal skin functioning. it also promotes the natural glow to the skin. The herbal face wash was prepared from various herbs like Neem, Turmeric, Nutmeg, Liquorice, Honey, and the soothing agent as Xanthungum used for formulation. It gives beneficial effects to the face. The various parameters like colour, pH, consistency, washability, irritability and spreadability was checked and evaluated hence, from the present investigation it was found that the formulated herbal face wash was found to be more efficient as compared to the marketed face wash. At this formulation contains all herbal ingredients its nighters produce any harmful action on skin and are reliable.

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