

Formulation and Evaluation of Polyherbal Anti-Acne Facewash

Gautami Rathod¹, Patel Himil², Ms. Vaishali Pardhe³, Naitik Nai⁴

^{1,2}Research scholar of B.Pharmacy College, Rampura, Gujarat

³Assistant Professor at Department of Pharmaceutics B.Pharmacy College, Rampura, Gujarat

⁴Student of Parul University, Vadodara, Gujarat

ABSTRACT

Acne is a chronic inflammatory disorder of pilosebaceous unit, which involves increased Sebum production by sebaceous gland and abnormal desquamation of hair follicles occur in response to increasing androgen level with the onset of puberty. Obstruction of Follicles causes follicular distension which is often accompanied by the proliferation of the bacteria *Propionibacterium acnes* and activation of an inflammatory response. The Main aim of this study was to formulate and evaluate polyherbal anti-acne facewash containing extract of *Moringa oliefera*, *Aloe berbadandis* (Aloevera). The plants have been reported in the literature having good anti-microbial, anti-fungal, anti-inflammatory activity. Other than some of the chemicals like sodium lauryl sulfate, methyl paraben, Xanthan gum and marketed product like rose oil and turmeric are used. Prepared Formulation was evaluated for various parameters like colour, appearance, consistency, pH, viscosity, stability, washability and foamability. The efficacy when tested with a standard was almost same to that of poly herbal facewash. Concluded that from this study, extract was proved to be stable and considered as an effective herbal formulation for acne treatment.

KEYWORDS: *Propionibacterium Acne*, Anti-Inflammatory, Anti-Microbial, Anti-Fungal.

INTRODUCTION

Our skin is a largest organ on our body made up of different component including water, protein, lipid, and minerals. Throughout our life, our skin will change constantly, for better or worse. Our skin regenerates itself approximately every 27 days. So proper skin care is essential to maintain healthy skin.

There are four layer of skin:

1. Stratum corneum
2. Epidermis
3. Dermis
4. Subcutaneous

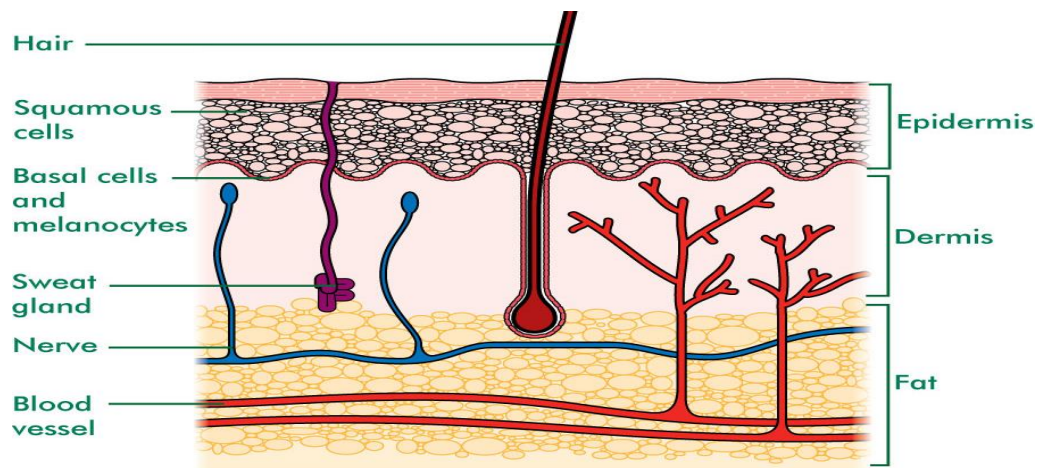


Figure.1 Skin layers

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 product found to be equally good for all skin type. Face wash is very helpful in removing dirt, oil and provide moisture to the dry skin. Both face washes & cleansers are used to rid your face of dirt, oil, pollution etc. A cleanser dissolves away excess oil makeup and grime from your face. These are oil soluble impurities. They can be removed by a face wash too, but that might be not 100% effective.

FORMS OF FACE WASH:

1. Cream based face wash
2. Gel based face wash
3. Liquid based face wash



Figure.2 Facewash

Anti-acne facewash:

Skin, being the most exposed part of our body to the pathogens, requires 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 faces wash.

In this study, the facewash were formulated using sodium lauryl sulfate and methyl paraben 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.

They can have different mechanism, for examples

- Control of sebum production.
- Anti-inflammatory effect, which can prevent deterioration of the condition caused by inflammation and redness.
- Anti-fungal agent that inhibits prionibacterium and staphylococcus epidermis, the main bacteria responsible for acne.



Figure.3 Acne and scars

Types of acne:

Acne vulgaris is a common skin condition characterized by formation of seborrhea, comedone, nodules, papules, pustules and cysts. It occurs in the area of the skin with high hair growth such as legs, face, back and upper chest. Blackheads and whiteheads are most common type of acne.

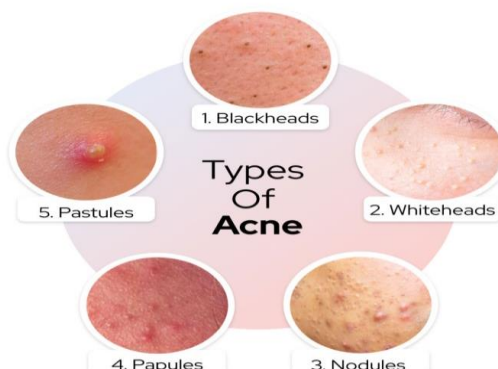


Figure.4 Types of acne

MATERIALS AND METHOD

Following plant materials and excipients are used to formulate this facewash:

Table: 1 List of ingredients

SR.NO	INGREDIENTS	QUANTITY			PROPERTIES
		F1	F2	F3	
1	Moringa leaves	15 ml	18 ml	18 ml	Anti-fungal, Anti-bacterial
2	Turmeric	0.2 gm	0.3 gm	0.3gm	Anti-septic For glowing purpose
3	Aloe vera	2 gm	3.5 gm	4 gm	Anti-inflammatory, Antioxidant
4	Rose oil	qs	qs	qs	As perfume
5	SLS	1 gm	1.3 gm	1.5 gm	Surfactant
6	Xanthan gum	0.5 gm	1 gm	1 gm	Gelling agent
7	Methyl paraben	1 ml	1 ml	1 ml	Preservative

METHODS

1. Collection

Leaves of Moringa oleifera were collected from botanical garden of Jay jalaram ayurvedic medical college, Shivpuri. Other herb like Aelovera is also collected from there.

2. Extraction

Leaves of Moringa oleifera are soaked overnight in purified water. After 24 hours, boil this leaves for 30 minutes.

3. Filtration

Cool down the extract of leaves and then filter it and collect the filterate in another beaker.

4. Development of formulation

Total 3 beakers are taken and prepared 3 formulations.

1. Take one beaker and add leaves extract and turmeric as required quantity. Mixed well.
2. In another beaker Aelo Vera gel, water and xanthan gum are mixed well and formulate gel type formulation.
3. Sodium lauryl sulphate is dissolved in water.

All 3 formulations are well mixed together till liquid base face wash is formed. And then methyl paraben is added as preservative. Prepared formulation were filled in suitable container and labeled it.

EVALUATION OF FORMULATION

1. Physical evaluation:

The organoleptic evaluation includes:

Color- Pale yellow

Odour- Pleasant

Texture- Smooth

- 2. Washability:** Formulation was applied on the skin and then ease and extent of washing with water were checked manually.
- 3. pH:** pH of 1% aqueous solution of the formulation was measured by using pH meter at constant temperature.
- 4. Viscosity:** Viscosity of facewash was done by using Brooke field viscometer at a 60 RPM.
- 5. Foamability test:** 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.
- 6. Stability test:** The purpose of stability testing is to provide evidence on how the quality of drug substance or drug product varies with time under the influence of variety of environmental factors such as temperature, humidity and light and enables to recommend storage condition and to predict. The shelf life. Stability study for cream was performed at accelerated condition i.e.25°C.
- 7. Skin irritation test:** Mark the area (1 cm²) on left hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24 hrs and reported.

RESULT AND DISCUSSION

The result of evaluation of this formulation is shown in table 2. Colour of the product is lemon yellow whereas marketed product is green in colour. Total 3 formulations were prepared for checking consistency and stability of formulation. All the formulation was easily washable, homogeneous and gives alkaline pH which is compatible with normal body skin physiology.

Table: 2 Evaluation of formulation

SR.NO	EVALUATION TEST	RESULT
1	Colour	Pale yellow
2	Odour	Pleasant
3	Texture	Smooth
4	Washability	Easily washable
5	pH	5.7
6	Viscosity	580 mpas
7	Foamability test	1.5 ml at 10minutes
8	Stability test	Stable at room temperature
9	Skin irritation test	No irritant

CONCLUSION

Poly herbal anti acne face wash was developed and characterized under stability study. A formulated poly-herbal facewash containing extract of moringa leaf, turmeric powder, Aloe vera, xanthan gum, methyl paraben, orange oil and rose water. This formulation are more acceptable in belief that it is safer than synthetic others. Because of no more chemical are used in it except SLS and methyl paraben. Evaluation parameter like physicochemical properties, spreadability, viscosity, foamability, skin irritation was performed and achieved appropriate results. The entire evaluation test is passed and gives accurate results related to this formulation but in formulation 2 consistency of product is achieved accurate and this formulation is very stable in compared with another.

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