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A Review: A Formulation and Evaluation of Herbal Aloevera Face Wash

Adarsh Mahendrasingh Pahalawat[1*], Ms.Jayshri Dikkar[2], Dr. Kailash Rathod[3]

[1]*Student, Mangaldeep Institute Of Pharmacy Chhatrapati Sambhajinagar ,Maharastra*

[2]*Assistant Professor ,Mangaldeep Institute Of Pharmacy Chhatrapati , Sambhajinagar,Maharashtra*

[3]*Principal, Mangaldeep Institute Of Pharmacy Chhatrapati Sambhajinagar , Maharastra*

[*]*Corresponding author*

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Abstract

Aloe vera plant has been known and used for its health, beauty, medicinal and ski n care properties for centuries. There are more than 300 species of aloe vera, gro wing mostly in dry regions of Africa, Asia, Europe and America. The botanical nam e of aloe vera is Aloe barbadensis miller. It belongs to the Asphodelaceae (lily fami ly) family and is a tree or shrub, perennial, xerophytic, succulent, pea green plant. The plant has triangular fleshy leaves with serrated edges, yellow tubular flowers and fruits containing many seeds. Aloe vera has 75 active components: vitamins, e nzymes, minerals, sugar, lignin, saponins, salicylic acid and amino acids. Many studies have been conducted to evaluate the different properties of Aloe Vera such a s anti-inflammatory activity, anti-diabetic, anti-high cholesterol, antioxidant effect, antibacterial activation, antiviral effect, anti-inflammatory, anti-acne, heart disease. Toner, Nutraceuticals, moisturizers, anti- inflammatories, skin protection against UV-A and UV-B rays and wound healing.[1]

Keywords: Aloe Vera, peppermint oil, glycerin, face wash

INTRODUCTION

Face wash refers to products that clean the face without drying it out. "Cleanser" is another name for face wash. Face wash has been determined to be suitable for all skin types. Face wash is particularly effective in removing dirt, oil, and moisture from dry skin. Face washes and cleansers are both used to remove grime, oil, and pollution from your face. A cleanser removes excess oil, makeup, and filth from the skin. These are contaminants that are oil soluble. They can also be removed with a face wash, though this may not be completely successful.

Ordinary soaps can dehydrate facial skin, which is quite fragile. A face wash is a gentle cleaner that gets the job done. without causing irritation to the skin As a result, the skin seems youthful and active. The objective of a face wash could be to provide cleansing, anti-wrinkle, anti-acne, moisturising, and skin fairness. Skin whitening products are thought to affect the synthesis and metabolism of melanin in the skin by suppressing melanin production in melanocytes and hereby reducing the amount of melanin present. Aloe vera, rose

water, Raw honey, peppermint oil, lavender essential oil, soap base, and glycerol are examples of agents that suppress melanin synthesis.[2]

Aloe vera (syn. Aloe barbadensis Mill., Fam. Liliaceae), also known as Barbados or Curaçao Aloe, has been used in traditional and folk medicines for thousands of years to treat and cure a variety of diseases. Although the plant is native to northern parts of Africa, it has rapidly spread across the world because its cultivation is easy. An important distinction has to be made between the strongly laxative and purgative latex derived from the bundle-sheath cells and the clear mucilaginous gel. The plant has been used by Egyptians, Assyrians, and Mediterranean civilizations, as well as in Biblical times. A variety of aloe species are still used in folk medicines of Africa and Asia. Hunters in the Congo reportedly rub their bodies in the clear mucilaginous gel to reduce perspiration; some African tribes apply the gel for chronic conjunctivitis; the gel is used in India for the treatment of asthma.[3]

Aloe vera gel is used as an ethnomedicine in Trinidad and Tobago for hypertension. The most common folk use of aloe has been for the treatment of burn wounds and specifically to aid in the healing process, reduce inflammation, and tissue scaring. The gel was described by Dioscorides and used to treat wounds and mouth infections, soothe itching, and cure sores. The use of aloe vera gel as a household remedy in the United States was triggeredby reports of its beneficial effect on radiation dermatitis followed by a boom in cultivation in the 1930s; it remains a common plant and for burnsandabrasions. Important contemporary uses of the gel exist in traditional medicines of India, China, and Mexico, as well as Middle America and the West Indies.Mexico is producing roughly 47% of aloe worldwide with a total sales volume of $123.5 million US dollars as of 2008.[4]

Despite its widespread popularity, scientific evidence on the aloe vera gel remains sparse. Aloe vera gel is regarded as safe if applied topical with only afew allergic reactions being reported. The efficacy of aloe vera gel to treat burn wounds, genital herpes, and seborrheic dermatitis have been shown in clinical trials, but other indications such as psoriasis or internal application for the treatment of type 2 diabetes remain inconclusive. The major application of aloe vera gel remains as a skin moisturizer in cosmetics and as an après treatment for sunburns, for which it has proven its effectiveness.

The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. The name Aloe vera derives from the Arabic word “Alloeh” meaning “shining bitter substance,” while “vera” in Latin means “true.” 2000 years ago, the Greek scientists regarded Aloe vera as the universal panacea. The Egyptians called Aloe “the plant of immortality.” Today, the Aloe vera plant has been used for various purposes in dermatology.[5]

Definition of Face Wash

A cleanser is a facial care solution that removes makeup, dead skin cells, oil, grime, and other impurities from the face's skin. This aids in pore unclogging and acne prevention. In addition to toner and moisturiser, a cleanser can be used as part of a skin care routine.


Fig . Aloevera

Advantages of Face Wash

- It aids in the removal of dead skin cells, allowing new skin cells to take their place.
- It keeps skin looking young and healthy.
- It gives the skin a healthy glow.
- By removing dead skin cells, you might expect your skin to age more slowly.[6]

Properties of Face Wash

- Exfoliation stimulates skin regeneration and renewal by increasing blood circulation.
- It must be both stable and attractive.
- When applied to the skin, it should soften.
- It should be able to spread without dragging.
- It should not feel oily or greasy while being applied

Review of Literature

1. Surjushe et al. reported that Aloe vera possesses moisturizing, anti-inflammatory, antimicrobial, and wound-healing properties. The study explained that Aloe vera gel contains vitamins, enzymes, amino acids, and polysaccharides which help in maintaining healthy skin and improving skin hydration. Due to these beneficial effects, Aloe vera is widely used in herbal cosmetic formulations and skincare products.

2. Banchhor et al. studied the formulation and evaluation of herbal face wash preparations using natural ingredients. The authors concluded that herbal face wash effectively removes dirt, excess oil, and microorganisms from the skin while causing fewer side effects compared to synthetic face wash products

3. Cock et al. investigated the antimicrobial activity of Aloe vera leaf gel and reported significant antibacterial activity against various skin pathogens. The study suggested that Aloe vera can be effectively used in anti-acne and skin-protective formulations.

4. Dal'Belo et al. evaluated cosmetic formulations containing Aloe vera extract and observed significant moisturizing effects on the skin. The study revealed that Aloe vera improves skin hydration and maintains softness and smoothness of the skin

5. Kumar et al. reported that herbal cosmetics are becoming increasingly popular because of their natural origin, safety, and minimal adverse effects. The authors highlighted the growing use of herbal ingredients such as Aloe vera, neem, and turmeric in skincare formulations.

6. Sharma et al. explained the importance of evaluation parameters such as pH, viscosity, foamability, spreadability, washability, and stability studies in herbal cosmetic formulations. These parameters are essential for determining the quality, effectiveness, and safety of herbal face wash products.

7. Kokate et al. described the pharmacognostic and medicinal importance of Aloe vera and other herbal drugs used in cosmetic preparations. The authors emphasized the therapeutic value of herbal ingredients in maintaining healthy skin.

8. Mithal et al. discussed various methods used in the formulation and evaluation of cosmetic products. The study highlighted the importance of stability testing and quality control in herbal skincare formulations.

Aim

To formulate and evaluate a herbal face wash containing Aloe vera extract for effective cleansing, moisturizing, soothing, and improving skin health with minimal side effects.

Objectives

1. To prepare a herbal face wash using Aloe vera and suitable natural ingredients.
2. To study the physicochemical properties of the formulated face wash such as pH, viscosity, color, odor, and foamability.
3. To evaluate the cleansing ability and spreadability of the herbal face wash.
4. To assess the stability of the formulation under different storage conditions.
5. To determine the skin irritation potential and safety of the prepared formulation.
6. To evaluate the antimicrobial and moisturizing properties of the herbal face wash.
7. To develop a herbal formulation that is safe, economical, and suitable for daily skin care use.

MECHANISM OF ACTIONS

1. Healing properties: Glucomannan, a mannose-rich polysaccharide, and gibberellin, a growth hormone, interacts with growth factor receptors on the fibroblast, thereby stimulating its activity and proliferation, which in turn significantly increases collagen synthesis after topical and oral Aloe vera. Aloe gel not only increased collagen content of the wound but also changed collagen composition (more type III) and increased the degree of collagen cross linking. Due to this, it accelerated wound contraction and increased the breaking strength of resulting scar tissue. An increased synthesis of hyaluronic acid and dermatan sulfate in the granulationtissue of a healing wound following oral or topical treatment has beenreported.

2. Effects on skin exposure to UV and gamma radiation: Aloe vera gel has been reported to have a protective effect against radiation damage to the skin. Exact role is not known, but following the administration of aloe vera gel, an antioxidant protein, metallothionein, is generated in the skin, which scavenges hydroxyl radicals

and prevents suppression of superoxide dismutase and glutathione peroxidase in the skin. It reduces the production and release of skin keratinocytederived immunosuppressive cytokines such as interleukin-10 (IL-10) and hence prevents UVinduced suppression of delayed typehypersensitivity.[7]

3. Anti-inflammatory action: Aloe vera inhibits the cyclooxygenase pathway and reduces prostaglandin E2 production from arachidonicacid. Recently, the novel antiinflammatory compound called C-glucosyl chromone was isolated from gel extracts.

4. Effects on the immune system: Alprogen inhibit calcium influx intomast cells, thereby inhibiting the antigen-antibody-mediated releaseofhistamine and leukotriene from mast cells. In a study on mice that had previously been implanted with murine sarcoma cells, acemannan stimulates the synthesis and release of interleukin-1 (IL-1) and tumor necrosis factor from macrophages in mice, which in turn initiated an immune attack that resulted in necrosis and regression of the cancerous cells. Several low-molecular-weight compounds are also capable of inhibiting the release of reactive oxygen free radicals from activated human neutrophils.

5. Laxative effects: Anthraquinones present in latex are a potent laxative. It increases intestinal water content, stimulates mucus secretion and increases intestinalperistalsis.

6. Antiviral and antitumor activity: These actions may be due to indirect or direct effects. Indirect effect is due to stimulation of the immune system and direct effect is due to anthraquinones. The anthraquinone aloin inactivates various enveloped viruses such as herpes simplex, varicella zoster and influenza. In recent studies, a polysaccharide fraction has shown to inhibit the binding of benzopyrene to primary rat hepatocytes, thereby preventing the formation of potentially cancer-initiating benzopyrene-DNA adducts. An induction of glutathione S-transferase and an inhibition of the tumor-promoting effects of phorbol myristic acetate has also been reported which suggest a possible benefit of using aloe gel in cancer chemoprevention.

7. Moisturizing and anti-aging effect: Mucopolysaccharides help in binding moisture into the skin. Aloe stimulates fibroblast whichproduces the collagen and elastin fibers making the skin more elastic and less wrinkled. It also has cohesive effects on the superficial flaking epidermal cells by sticking them together, which softens the skin. The amino acids also soften hardened skin cells and zinc acts as an astringent totightenpores. Its moisturizing effects has also been studied in treatment of dry skin associated with occupational exposure where aloe vera gel gloves improved the skin integrity, decreases appearance of fine wrinkle and decreases erythema. It also has anti-acne effect.[8]

8. Antiseptic effect: Aloe vera contains 6 antiseptic agents: Lupeol,salicylic acid, urea nitrogen, cinnamonic acid, phenols and sulfur. They all have inhibitory action on fungi, bacteria and viruses.

MATERIALS AND METHODS

II. METHOD OF PREPARATION

A. Collection

Aloe Vera gel, Rose water, peppermint oil, almond oil, glycerin and soap base are purchased from the local market.

B. Preparation Herbal Extract

Herbal extract can be prepared by method by using rose water assolvent. Desired quantities of the herbal

drug were weighed and each herb was macerated with rose water in conical flask for 3 days seperately After 3 day, content were filter out by using a simple filtration method and filtrate were collected in vessel seperately.

C. Filtration

Extract were filtered using simple filter paper and funnel for two times.

D. Development of Formulation

Desired quantities ofaloeVera gel and raw honey mixture by stirring together with the desired quantity of herbal extract were added peppermint oil and almond oil.To this add a few ml of glycerin and soap base in order to obtain accurate consistenc. Then the prepered formulation were filtered in a suitable container and labelling. [9]

III. INGREDIENTS

1. Aloe vera
2. Rose water
3. Raw honey
4. Alomand
5. peppermint oil
6. Glycerin
7. Soap base

IV. INGREDIENT USED IN FORMULATION

A. Aloe Vera

1. Scientific name: Aloe vera.
2. Order: Asparagales.
3. Family: Asphodelaceae.
4. Subfamilly: Asphodeloideae.
5. Kingdom: Plantae.
6. Family: Asphodelaceae.
7. Botanical name: Aloe barbadensis miller.

Contents Aloe vera

Vitamins, enzymes, minerals, carbohydrates, lignin, saponins, salicylic acids, and amino acids are among the 75 potentially active ingredients found in aloe vera. Vitamins: It contains antioxidant vitamins A (beta-carotene), C, and E. Vitamin B12, folic acid, and choline are also present.

B. Rose Water

Fig. Rose Water

Contents of rose water

Rose water is high in vitamins A, C, E, and B, as well as anti-inflammatory properties.

Fig. Raw Honey

C. Raw Honey

Benefits of Raw Honey for Skin and Face

1. Deeply hydrates the skin
2. It cleans the pores.
3. Lightens Scars
4. Gentle Exfoliator
5. Helps with sunburn

6. Prevents acne and pimples
7. Adds a Natural Glow
8. Reverses Age
9. Hydrates the Skin
10. Assists in Wrinkle Reduction
11. Brightens the Skin Complexion

D. Almond Oil.

For Hair

1. Reduces Hair Fall: Magnesium + biotin strengthen roots
2. Adds Shine: Omega fatty acids smooth frizz, add gloss
3. Scalp Health: Antimicrobial, reduces dandruff & itchiness
4. Split Ends: Seals cuticles when used as leave-in

Fig . Almond Oil

E. Peppermint oil

Benefits of using peppermint oil for skin

1. It revitalises the skin: Adding peppermint essential oil to any skin care recipe helps your skin feel renewed, invigorated, and alive.

2. It lowers pimples: Peppermint essential oil's antimicrobial and antiseptic properties aid in the reduction of pimples and lesions such as papules, pustules, nodules, cysts, and active comedones.[13]

Content of peppermint oil

Menthone and menthol are the two primary chemical components of peppermint oil.

Fig. Peppermint Oil

G. Soap Base

Base material of soap base

1. Foaming agent
2. Cleansing agent
3. Expedient.

The basic ingredients of soap bace

a. Vegetable oil.
b. 100 percent pure lye.
c. Distilled water.
d. Essential or skin-safe fragrance oils (optional)
e. Colorants

Fig . Base Soap

Formulation of herbal aloevera facewash

Sr.No.	Ingredient.	Quantity
1.	Alove Vera	3 gm
2.	Rose Water	1 ml
3.	Peppermint Oil	1 ml
4.	Almond oil.	1 ml
5.	Glycerın.	2 ml
6.	Soap Base.	2 gm

VI. EVALUATION TEST FOR FACE WASH

In Vitro Evaluation

1. Rheological Characteristic: We were studied for some physical properties colour, clogging, viscosity change and sensation test.

2. Determination of pH: The pH of formulations was determined using digital pH meter. One gram of face wash was dissolved in 100 ml of demineralised and stored for two hours. The measurements of pH of each formulation were done in triplicate. Instrument was calibrated before use with standard buffer solutions at pH 4

3. Determination of Viscosity: 100 gm of each of formulation was weighed and transferred to beaker. The help of Brook field viscometer (LV viscometer), spindle no 3 at 10 rpm for 5 min. Before measurement declaration of face wash was done and the face wash was filled in appropriate viscosity of formulations were determined with the Wide mouth container. Samples of the face wash were allowed to settle over 30 min at the assay temperature (25

a. ±l'C) bcfore the measurements. Viscosity of formulation was determined using the formula. Viscosity (cp) = Dial Reading x Factor.

4. Spreadability: Spreadability determination of formulations was determined by an apparatus suggested by Multimer et al. which was fabricated in laboratory & used for study. The apparatus consists of a wooden block with a fixed glass slide with one end tied to weight pan rolled on the pulley which was in horizontal level with fixed slide. An excess of whitening face wash sample 1.5 gm was placed between two glass slide and a 1000 gm weight was placed on slide for 5 minutes to between compress the sample to uniform thickness weight (60gm) was added to the pan. It was calculated using the formula; S= ml /t Where, s= spreadability in gm.cm/sec m= weight tied to upper slide 1= length of glass slide t= time in seconds Length of glass slide was 11.2 cm and weight tied to upper slide was (60gm) throughout the experiment.

5. Washability: The product was applied on hand and was observed under running water.

6. Stability Study: The instant whitening face wash were also subjected to the following condition of temperature and relative humidity during stabilitk agies fiti serinentm temperature[14]

Observation Table

Sr.No.	Physical Parameters	Inference
1	Color	Slightly Green
2	Odour	Pleasant
3	Apperance	Trianslucent
4	Feel On Application	Smooth and slipper
5	PH	6.5

VIII. THE ANATOMY OF SKIN

A. The Epidermis

1. The epidermis is the skin's outer layer, and it serves as the body's first line of protection against bacteria, viruses, and even the outside world. But there isn't just one layer! The epidermis is actually made up of four thinner layers to cover all of its functions:

2. The stratum corneum is the topmost layer, and its thickness varies depending on where it is on the body (which is why, say, the skin on your heel is much thicker than that of your eyelid).

3. The stratum granulosum is the next layer. The cells in this area generate a waxy substance that keeps your skin dry.

4. The stratum spinosum follows, which is made up of cells that act as glue for your skin cells, binding other cells together.

5. The stratum basale is the epidermis' lowest layer. It contains stem cells, which divide to generate new skin cells. These are then pushed to the surface of the skin.

B. The Dermis

1. Much of the magic happens in the dermis—at least in the skin. The majority of the dermis is made up of collagen and elastin, as well as fibroblasts (the type of cell that creates the collagen and elastic tissue). This layer has several functions:

2. Blood and lymph vessels are found in the dermis layer and are responsible for giving nutrients to your

skin as well as removing waste or toxins.

3. The sweat glands are found in the dermis. They produce perspiration through your pores, which cools the body while also removing impurities.

4. The hair follicles (where your hair is anchored) and oil glands, which generate the oil that softens and smoothes skin—sometimes too enthusiastically, leading in breakouts and greasiness—are also found in the dermis.[15]

C. The Subcutaneous Layer

a. The deepest layer of skin is this layer of fat, which connects your bones to your muscle and bones. It's so deep that your skin care products' active ingredients will never reach it. This layer is responsible for the following tasks:

b. The subcutaneous layer functions similarly to a thermostat. It protects the body and can also be used as a source of energy in a pinch.Finally, the subcutaneous layer contains additional blood vessels, nerve endings, hair follicle roots, and the deepest oil-producing sebaceous glands.

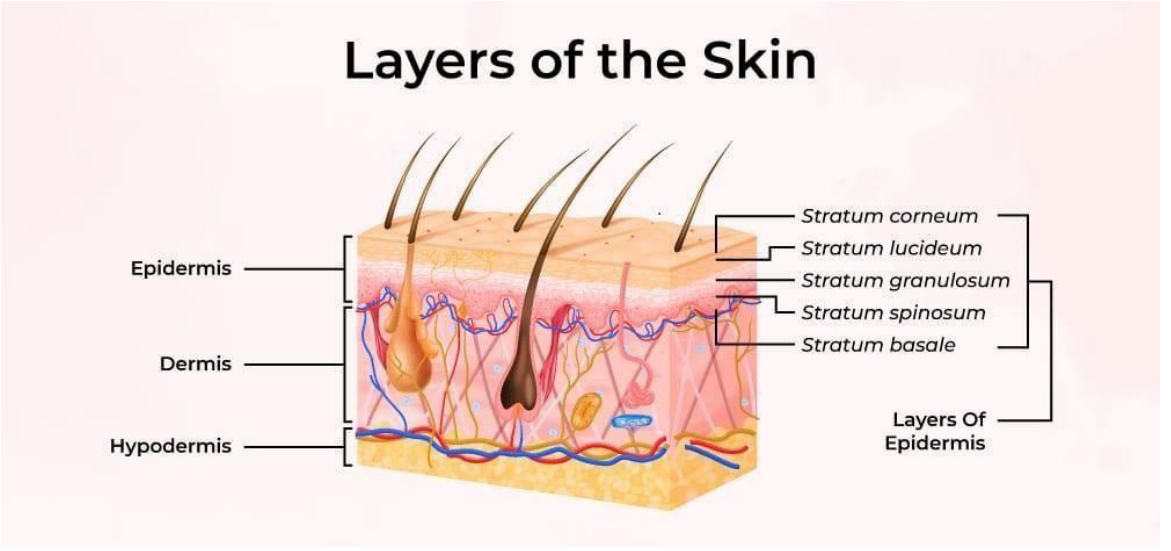

Fig . Skin Layers

OBJECTIVES AND RESULT

1. To formulate a herbal face wash containing Aloe vera as the main active ingredient.
2. To prepare a safe, effective, and skin-friendly herbal cleansing formulation using natural ingredients.
3. To evaluate the physical properties of the prepared face wash such as:

Color

Odor

Appearance

Consistency

pH

Washability Foamability

4. To study the cleansing action and skin compatibility of the herbal face wash.
5. To evaluate the stability of the formulation under different storage conditions.
6. To determine the irritation potential of the prepared herbal face wash on skin.
7. To develop a face wash formulation that helps in cleansing, moisturizing, soothing, and refreshing the skin naturally.

The herbal aloe vera face wash was successfully formulated using natural ingredients. The prepared formulation showed good appearance, pleasant odor, smooth consistency, and satisfactory cleansing action. The pH of the formulation was found to be compatible with skin, indicating that it is safe for topical application.

The face wash exhibited good foamability, easy spreadability, and good washability. No signs of skin irritation, redness, or inflammation were observed during the evaluation study, indicating that the formulation is skin-friendly and safe for regular use.

The presence of Aloe vera provided moisturizing, soothing, and cooling effects on the skin. The formulation also demonstrated satisfactory stability during storage studies without significant changes in color, odor, or consistency.

Overall, the formulated herbal aloe vera face wash was found to be effective, stable, and suitable for maintaining healthy and clean skin.

DISCUSSION

The present study was carried out to formulate and evaluate a herbal face wash containing Aloe vera gel as the main active ingredient. The prepared formulation showed good appearance, homogeneity, and acceptable consistency. The pH of the formulation was found to be near the normal skin pH, indicating that the preparation is suitable for topical application without causing irritation to the skin.

The formulated herbal face wash exhibited satisfactory foamability and spreadability, which are important characteristics for effective cleansing action. The formulation was easily washable and produced a refreshing effect on the skin after application. Aloe vera present in the formulation provided moisturizing and soothing effects due to the presence of vitamins, enzymes, amino acids, and polysaccharides.

The stability study indicated that the formulation remained stable under normal storage conditions without significant changes in color, odor, pH, or consistency. The skin irritation test showed that the formulation was safe and did not produce redness or irritation on the skin surface.

The study confirms that herbal ingredients can be effectively incorporated into cosmetic preparations for skincare applications. Compared to synthetic formulations, the herbal face wash may produce fewer side effects and provide better skin compatibility.

CONCLUSION

From the present study, it can be concluded that the formulated herbal Aloe vera face wash was successfully prepared and evaluated using suitable parameters. The formulation showed good cleansing action, satisfactory foamability, proper pH, good spreadability, and stability. The presence of Aloe vera provided moisturizing, soothing, and skin-protective effects.

Declaration of Conflicting Interests

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