



# FORMULATION AND EVALUATION OF ANTI-ACNE CREAM CONTAINING ALOE VERA EXTRACT AND TURMERIC EXTRACT

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**ABSTRACT:-** Every individual has at slightest one occasion of skin breakout, pigmentation sunburn marks, and pimples throughout their lifetime. Clients are looking for items like anti-acne creams that can treat their skin issues and give them sound, excellent skin. To make and evaluate a cream that employs turmeric to give a brilliant anti-acne effect. A cream base comprising beeswax, fluid paraffin, borax distilled water, and rose oil was utilized to plan the cream is used by individuals to remedy an assortment of sicknesses and contaminations. Despite this, more restorative arrangements are available that contain cancer prevention agents, sun assurance, and moisturizing specialists since they moderate the aging handle of the skin. To create a high-quality, secure, steady, and multifunctional item with high efficiency, home-grown detailing is fundamental. That being said, the lion's share of creams in the advertisement is loaded with chemicals that seem to cause antagonistic responses in the client. All of the information was evaluated based on a few characteristics, counting solidness, spread capacity, consistency, and pH. There is no indication of stage partition, and the detailing is effortlessly evacuated with great spreading capacity. During the irritancy trial, there is no edema, redness, aggravation, or inconvenience. It is secure to apply these formulations to look at the other parameters. These investigations show that the extract's and the cream's base's compositions are more suitable, stable, and secure.

**Key words:-**Anti-acne, Aloe Vera, W/O cream, Hydration, Erythema, Photo security, and so on.

## INTRODUCTION:-

The cream is classified as a semisolid emulsion that is oil in water (w/o) sort and is meant for outside application. Cream is isolated into two categories: water in an oil emulsion and oil in water [1]. Its essential work is to remain longer at the application location when connected to the external or superficial layers of the skin. The cream works by protecting the skin from different natural factors, providing a calming impact, treating diseases, and clearing up skin breakouts and tan lines. There are different kinds of creams, counting rub, cold establishment, vanishing, cleansing, and hand and body cream. The primary objective of our work is to make homegrown creams that can reduce wrinkles, eliminate acne and skin aggravation, and upgrade skin tone [2, 3].

According to around the world information, generally, 85% of individuals will have skin breakouts at the age of 12 to 25 a long time, 8% of grown-ups will encounter it at the age of 23 to 24 a long time, and 3% of grown-ups will experience it at the age of 35 to 44. Skin breakout is a concerning condition, particularly for young people and adolescents [4]. Since Propionibacterium skin breakout and Staphylococcus aureus were found in the test taken from the acne understanding at the same time, they were the cause of the skin breakout. In any case, a

concerning issue is the growing resistance of the microscopic organisms that cause skin breakouts to antibiotics.[5] Because of their various health benefits, consumers' intrigue in characteristic bioactive compounds as useful components in makeup has increased. In expansion to their tangible and dietary qualities, they may moreover have a positive effect on skin wellbeing by working as defensive operators. Whereas a few skin conditions may be considered self-limiting, they can too have unfavorable mental impacts on an individual, such as low self-esteem, social disengagement from mortification, or in the most exceedingly bad case, suicidal thoughts. [6]

In our recipe, we have utilized two herbal ingredients: extracts from aloe vera and turmeric. Aloe Vera has anti-acne and moisturizing properties. Additionally utilized to treat burn injuries. Curcumin comes in second and Aloe Vera is the primary active component. In addition to these many additional abilities, curcumin also demonstrates the ability to heal wounds prevent UV damage, treat aging, and cure chronic skin conditions. To provide aroma, rose oil is used. We're working on creating a cream that works for every type of skin. [7] In comparison to other skin illnesses, acne has the highest prevalence. Nearly everyone has had skin prone to acne, especially throughout adolescence. Even while acne isn't seen to be a serious illness, everyone who has it feels that their appearance is off, which frequently lowers the incidence and makes it difficult to go about their everyday activities. [8]



Fig:- Causes of Acne

## ANATOMY OF SKIN:-

Skin is the largest organ in the body and covers the body's entire external surface.

### Structure:-

The Epidermis, Dermis, and Hypodermis are three constituent layers, and each layer has distinctly different architecture and functions. Based on the thickness of epidermal and dermal layers, each layer of skin is classified according to its variation in thickness, which is contingent upon the specific body location. (9)

#### 1) Epidermis:-

The skin that is visible and touchable on top is called the epidermis. The epidermis protects your body and bloodstream from infections caused by bacteria and germs. Melanin, the pigment responsible for skin color, is found in the epidermis.

## 2) Dermis:-

The dermis layer is located beneath the epidermis. The projections that resemble fingers are called papillae. Comprising of collagen, lipids, and fibers, this layer gives the skin its strength and flexibility. After being exposed to sunshine, the dermis produces vitamin D to absorb calcium.

3) **Hypodermis:-**The basal layer of skin is called the hypodermis. The hypodermis, sometimes referred to as subcutaneous tissue, serves as the body's barrier, insulator, and energy reserve. It also helps control body temperature and serves to connect the skin to muscles and bones. (10)

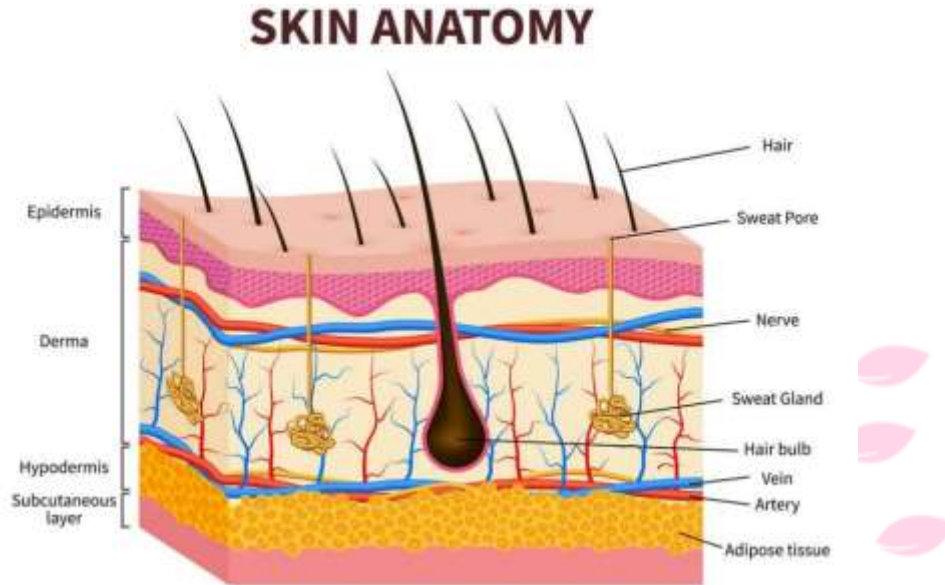


Fig:- Anatomy of Skin

## PHYSIOLOGY OF SKIN:-

The skin is the interface between the body and the terrain. It has several physiological capacities that are necessary to keep up homeostasis, assurance, and social commerce. Its most vital corridor which will be considered in this chapter are(11)

1. Thermoregulation
2. Sensation
3. Water storehouse
4. Absorption
5. Expression
6. Synthesis of vitamin D.

1) **Protection:-** The skin ensures the body by shaping a waterproof layer which ensures the more profound structures and avoids drying out from the misfortune of water. This is due to the keratinized epithelium in the epidermis. The skin too shapes a boundary;

1. Physical trauma
2. Chemical trauma
3. Micro-organisms
4. Radiation (for illustration UV light)

2) **Thermoregulation:-** The human body is kept at a surprisingly steady center temperature indeed in extremes of warm through a negative input framework including the skin, skeletal muscles, sweat organs, and the hypothalamus. This guarantees that the body temperature is kept up around 37°C and gives an ideal

environment for protein-intervened components of metabolism.<sup>3</sup> If the center body temperature drops, the hypothalamus sends motivations to the skin that choke arterioles to minimize warm misfortune and fortify skeletal.

- 3) **Sensation:-** The skin is the fundamental interface between the body and the environment. As such, it has various tangible receptors that permit the person to see natural boosts over a run of modalities. The tall number of tangible nerve endings in the skin too give prompt tactile criticism from the environment to the tangible cerebral cortex. This leads to reflex activities such as pulling back from a hot protest to avoid damage. Certain regions of the body have an expanded number of tactile.
- 4) **Water storage:-** The obstruction work of the skin is fundamental not only assurance but also for keeping up ordinary volumes of water and electrolytes in the human body. The skin contains 18–20% of the body's add up to water substance. The capacity of the skin to hold water is too imperative in upgrading the defensive capacities of the skin depicted over. When the skin loses water, it leads to breaks and chapping, in this way breaching the skin's bordering line of guard and permitting harmful jolts to enter the skin.
- 5) **Absorption:-** Although the skin acts as an obstruction between the life form and the environment, water, and a few water-soluble compounds can moreover be ingested through the skin. The skin, in any case, has a more prominent capacity to retain lipophilic or maybe hydrophilic substances. This guideline is utilized in the application of transdermal patches or creams to accomplish the systemic organization of different drugs. Assimilation is expanded in conditions of skin harm where the obstruction work is decreased by injury or malady.
- 6) **Expression:-** The skin, particularly over the confront, is a fundamental portion of social interaction, pulling into consideration for social and sexual purposes, and is subsequently basic to the survival of the species.<sup>6</sup> Facial expression is an energetic device utilized by people to transmit data to others. These can be either intrinsic or learned expressions and can express a wide run of feelings, practices, and communications. People are too exceptionally proficient at utilizing data communicated from another individual's confront to make a...
- 7) **Synthesis of vitamin D:-** In expansion to the blend of melanin, as depicted over, bright light moreover changes over 7-dehydrocholesterol to cholecalciferol (vitamin D<sub>3</sub>) in the skin. This preparation is basic to the generation and support of bone by osteoblasts. In typical grown-ups, significantly more cholecalciferol is created in the skin than inferred from nourishment. Be that as it may, dietary sources are generally more vital amid pregnancy, in those restricted inside and in the elderly. With age, the preparation of vitamin D.

## FACTORS AFFECTING ANTIACNE:-

1. Research suggests that eating specific foods, such as those high in carbohydrates like bread, bagels, and chips, may exacerbate acne.
2. Medications that include testosterone and lithium corticosteroids.
3. Overproduction of oil, or sebum.
4. The hormones known as androgens induce the sebaceous glands to grow and produce more sebum in both males and girls going through adolescence. (12)

## MATERIAL:-

1. Collection of plant material.
2. Aloe Vera and turmeric were collected from the local garden.

Sr. No	Material
1	Aloe Vera extract
2	Turmeric extract
3	Beeswax
4	Liquid paraffin
5	Borax
6	Methylparaben
7	Rose oil

### TURMERIC:-

1. **Synonym:-** Haldi.
2. **Family:-** Zingiberaceae.
3. **Chemical Constituents:-** Curcumin, Demethoxy curcumin, Bisdemethoxy curcumin.
4. **Use:-** Anti-oxidant.



Fig:- Turmeric

### ALOE VERA:-

1. **Synonym:-**Ghrit kumari.
2. **Family:-** Liliaceae.
3. **Chemical constituents:-** Anthracin glycosides, barbaloin, or aloin iso-barbaloin.
4. **Uses:-** Anti-acne



Fig:- Aloe Vera

## METHOD OF PREPARATION:-

Selection of herbs:- This plant is extracted with ethanol and utilized in a multipurpose mixture with turmeric and aloe vera. Based on scholarly research, aloe vera and turmeric were chosen.

### 1) Turmeric extract:-

Both topical and oral treatments are recommended by proponents of turmeric therapy for acne. (13) Skin prone to acne may benefit from using turmeric, according to research. The strong antibacterial and anti-inflammatory qualities of curcumin, the product's key ingredient, have been shown to help fight germs that can cause acne outbreaks and diminish inflammation. (14)

### 2) Aloe extract:-

Collected aloe vera leaves that were healthy, mature, and fresh were cleaned with distilled water. Next, a sterile knife was used to cut a portion of the leaf longitudinally after the leaves had properly dried in a hot air oven. The Aloe Vera gel came next employing a sterile knife, that is, the colorless parenchymatous tissue was cut away. After the contaminants and fibers are taken out by filtering through muslin fabric. After that, the clear Aloe Vera extract that was employed in the preparation is known as the filtrate or filtered product. (15)

Table:- Formula for Anti-Acne Cream Formulation

Sr. No	Ingredients	For 30 gm quantity taken	Uses
1	Turmeric extract	4.0 ml	Antioxidant, antibacterial
2	Aloe Vera extract	7.0 ml	Anti-acne
3	Beeswax	13 gm	Base

4	Liquid paraffin	5.0 gm	Emollient
5	Rose oil	Q. S	Fragrance
6	Methylparaben	1.2 gm	Preservatives
7	Borax	0.5 gm	Alkaline agent

## PROCEDURE:-

Maintain a constant heating temperature of 75°C for liquid paraffin and beeswax in a borosilicate glass beaker. To dissolve borax and methylparaben and obtain a transparent solution (aqueous phase), mix the ingredients in a different beaker with purified water. To the heated oily phase, gradually add this watery phase. After that, mix the prescribed amounts of turmeric and aloe vera extract well until a smooth cream develops. Next, add a few drops of rose oil. Place this cream on the slab, stir it, and add a few drops of distilled water if needed. Use a geometric motion to blend the cream and give it a smooth consistency. (15)



Fig:- Final Product

## EVALUATION:-

### 1) Physical evaluation:-

In these tests, the cream was observed for color, odor,

Color – Yellow  
 Odor – pleasant  
 State – semi-solid.(16)

### 2) Irritancy:-

There is nil observation for Irritant effect, erythema, and edema. (17)

**3) Wash ability:-**

After applying a tiny quantity of cream to the hand, it is readily cleaned with tap water, according to observation. (18)

**4) pH:-**

To find the pH, pH paper was utilized. Nature's basic pH was found. (19)

**5) Phase separation:-**

The prepared cream was stored away from light and at a temperature between 25 and 1000C in a closed container. Phase separation was then examined every day for thirty days. There is no phase separation and no changes have been noticed in the cream.

**6) Spread Ability:-**

Two slides were given the time, measured in seconds, to remove themselves from the cream that was poured under a particular force in between the slides. The amount of time the slide took to fall off was recorded. There's a decent ability to disseminate. (20)

**7) Homogeneity:-**

Tests for homogeneity were conducted on the formulation using both touch and visual appearance. The combination results in consistent cream extract dispersion. Both touch and appearance provided evidence of this. (21)

**8) Viscosity:-**

The homogeneity of the formulation was assessed by touch and appearance. Cream viscosity was measured using a Brooke field viscometer at 20 rpm and spindle number LV (64). The cream displays a normal viscosity range of 48890 cp. (22)

**RESULT AND CONCLUSION:-****Result:-**

The Anti-acne cream was prepared with turmeric extract and aloe vera extract.

**Conclusion:-**

India has a vast array of medicinal herbs that have been utilized for skin treatment since ancient times. In addition to numerous other causes, microbial infections are linked to acne, a prevalent skin condition, the anti-acne cream prepared with the help of aloe vera and turmeric extract which shows ideal properties for acne cure.

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