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Research Article

Formulation of Polyherbal Antiacne Cream

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ABSTRACT

A polyherbal anti-acne cream was prepared using extracts of the plants Tulsi and aloe vera along with base materials. The plants have been reported in the literature as having good antimicrobial, antioxidant, and anti-inflammatory activity. Formulations of the cream were prepared by varying the proportions of polymers and evaluated for their physicochemical properties like pH, spreadability, viscosity, homogeneity, appearance, afterfeel, and spreadability-like tests. The present study was to develop, evaluate, and compare the hydrating, erythema, and sun protection of the herbal w/o cream that comprises extracts of natural products from aloe vera and turmeric given in appropriate concentrations. The different types of formulations in cream of water in oil were formulated by the different concentrations of the natural drug.

INTRODUCTION

Many people prefer the herbal product over the synthetic one. Produce several harmful side effects Compare to the herbal product they have Minimal side effect. Acne becomes the major problem now a day's in adults, it Affect Both the gender (male, female). There are two types of acne disorder which affect The individual. i.e Acne rosacea And Acne vulgaris. Acne rosacea is a typical, Constant, and medically treatable skin disorder that resembles adult acne. Acne Rosacea Typically affects the middle third of the face, particularly the nose, causing Temporary aggravation and

temporary relief. The signs may appear and disappear, And the skin may remain clear for several weeks, months, or even years before They Reappear. Symptoms and indications of rosacea are: Redness of the face, tiny red Pimples and fine red lines on the Facial skin. An enormous, bulbous red nose, Eye Problems, include puffy, red eyelids and conjunctivitis. Acne vulgaris, often known as Acne, is a common skin ailment brought on by changes in the pilosebaceous units, Which Are skin structures made up of a hair follicle and the sebaceous gland that lies Adjacent to it.[1] Acne symptoms can be Divided into three categories: mild, Moderate, and severe. Open comedons, also

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known as blackheads, and closed Comedons, sometimes known as white heads, are two types of non-inflammatory Lesions. Papules, pustules, cysts, and Nodules are all examples of inflammatory Lesions. Seborrhea, comedones, inflammatory lesions, the presence of bacteria In The follicular canal, and sebum production are the main characteristics of acne Vulgaris.

We have used three herbal ingredients in our preparation which are Aloe Vera gel, Neem, Tulsi. Aloe Vera gel is used as a moisturizer, to reduce pimples and acne and Also used for treatment of burn wounds. Neem is used as an antifungal and anti-Inflammatory and it is also used to reduce scar, pigmentation, redness and itching of The skin. Tulsi is used to add glow to the skin and to promote wound healing and Remove acne.

Cream is defined as semisolid which are oil in water (o/w) or water in oil (w/o) type And these semisolid emulsions are Intended for the external application. Cream is Classified as oil in water and water in oil emulsion. It is applied on outer part or Superficial part of the skin and its main ability is to remain for a longer period of time At the site of application. The function of the Cream is to protect the skin against Different environmental condition and give soothing effect to skin and treat any Infection as well As tan and acne. There are differ#in vident types of the creams like Cleansing, cold, foundation, vanishing, massage, hand and body cream. The main Aim of our work is to develop herbal cream which can give effect like reduce acne And skin irritation, wrinkles and also Adding glow to the skin. Acne is a disturbing Issue especially for teenagers and adolescence according to global statistics Approximately 85% of Population will suffer this skin issue at age around 12-25 Years, nearly 8% adult at age 23-24 years old and only 3% of adult having Acne at Age 35-44 years old. Propionibacterium acne and

staphylococcus aureus were Responsible for acne since the presence of This bacterium in the sample isolated From acne patient at the same time, the increasing number of resistance of acne Inducing bacteria Towards the antibiotic is a worrisome problem. The interest of Consumer towards the natural bioactive compound has a functional Ingredient in the Cosmetic product has arisen due to their various health beneficial effect. Beside their Nutritional and sensorial Properties also their potential effect in improving skin ihealth Has been recognized has acting as protective agent. Although, some skin issue can Categorized as self-limiting but it also can give negative psychosocial consequences To individual by having low social withdrawal due to embarrassment and at the worst Scenario it can leads to suicidal ideation. We have used to herbal ingredient in our Preparation which are Aloe Vera extract and Tulsi extract. Aloe Vera is used as Moisturizer and anti-acne. Also used for treatment of burn wound. Aloe Vera is first Active ingredient and Tulsi is second active ingredient in it. And last one is neem.

Skin

Human facial skin is a soft, flexible, and multilayered tissue that covers the face and protects underlying structures while maintaining moisture, detecting stimuli, and contributing to facial expression.

Types of skin Disease

1. Acne and Scars

Acne is one of the most common skin problems, affecting teenagers and adults alike.

It occurs due to clogged pores, excess oil production, and bacterial growth. If left

untreated, acne often leaves marks or scars on the skin.



Symptoms: Pimples, blackheads, whiteheads, inflamed red bumps, and scarring.

2. Eczema

Eczema is a chronic skin disease that causes inflammation, dryness, and itching.

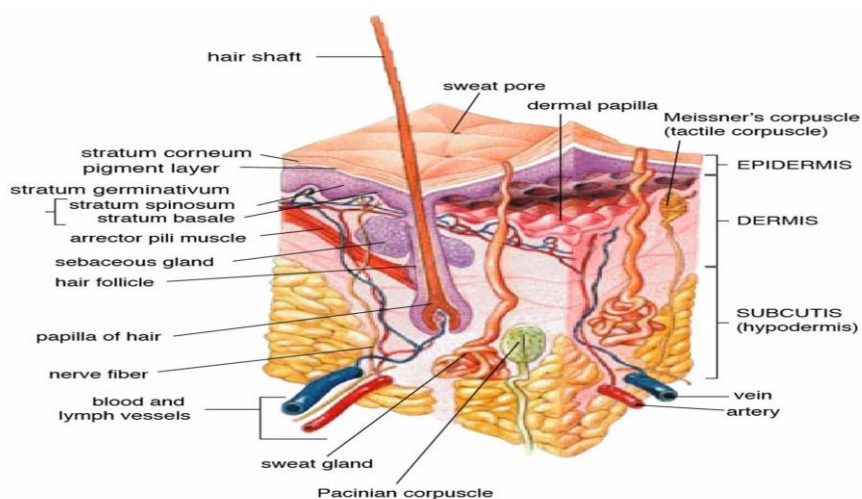
Symptoms: Red, itchy, dry, or cracked skin, often found on elbows, knees, and face.

3. Psoriasis

Psoriasis is an autoimmune disease that accelerates the skin cell cycle, resulting in a

rapid buildup of cells on the surface.

Symptoms: Thick, scaly patches of



Structure of Skin

1. Aim & Objectives

Aim

To formulate and evaluate a polyherbal anti-acne cream using Aloe vera, Neem, Tulsi, and Turmeric extracts, focusing on their antimicrobial, anti-inflammatory, antioxidant, and skin-protective properties.

Objectives

- To treat acne effectively
- To provide antimicrobial activity
- To reduce inflammation and redness
- To utilize synergistic effect of herbs
- To develop a safe and natural formulation

- To improve skin condition and texture
- To formulate a stable and effective topical dosage form
- To evaluate physicochemical and biological properties

4. MATERIALS AND METHODS

A. Plant Profile

1. NEEM

Synonyms : Azadirachta indica, Indian Lilac, Margosa Tree, Nim (Hindi), Kadunimb (Marathi)

Biological source : Neem consists of dried leaves, bark, seeds, and oil Obtained from Azadirachta indica, belonging to the



Family : Meliaceae.

Uses :

Chemical Constituents :

Neem (*Azadirachta indica*) contains over 140 active phytochemicals, Primarily terpenoids (limonoids), flavonoids, and steroids, found Throughout its leaves, bark, seeds, and fruit. Key compounds include Azadirachtin (insect repellent), nimbin (anti-inflammatory), nimbidin (antibacterial), and gedunin (antifungal), making it highly effective for Medicinal and agricultural uses.

- Treatment of acne and skin disorders
- Used in herbal anti-acne creams
- Dental care (toothpaste, mouthwash)
- Insect repellent and pesticide

2.ALOEVERA

Synonyms : Aloe Barbadensis, Aloe, Aloe Indica



Biological Source : Dried Juice of the leaves of Aloe Barbadensis Miller

(curacao aloes), Aloe perryi Baker (socotrine aloes).

Family: Liliaceae

Chemical Constituents : There are seventy-five potentially active Ingredients in aloe vera, including vitamins, enzymes, minerals, Carbohydrates, lignin, saponins, amino acids, and salicylic acids

Uses :

- Antibacterial Activity
- Anti-inflammatory Property
- Antiacne Properties
- Aloe vera can also be used to moisturize and soften skins

- Aloe vera has the ability to reduce facial pigmentation and dark Patches

3. TURMERIC

Synonyms : Curcuma domestica Valeton, Turmeric, Haldi

Scientific name : Curcuma Longa

Biological Source : Turmeric consists of the dried rhizomes (underground stems) of the plant Curcuma longa,

Family : Zingiberaceae



Chemical Constituents :

Contains curcuminoids: curcumin, demethoxycurcumin, Bisdemethoxycurcumin
Contains volatile oil: turmerone, atlantone, zingiberene Also contains proteins, carbohydrates, resins, and starch Main active constituent: Curcumin

Uses :

- Used as an anti-inflammatory agent

- Used as an antiseptic and wound healer
- Used in skin disorders and acne treatment
- Acts as an antioxidant
- Used in digestive disorders
- Used as a natural coloring and flavoring agent

4. Tulsi



Synonym: Tulsi, Holy Basil

Ocimum sanctum Linn. Ocimum sanctum /
Ocimum tenuiflorum

Biological Source: Tulsi consists of the fresh and
dried leaves (and Sometimes flowering tops) of

Family: Lamiaceae



Chemical Constituents :

Tulsi contains various important chemical compounds, such as:

- Eugenol – main active constituent (antiseptic, analgesic)
- Ursolic acid – anti-inflammatory property
- Rosmarinic acid – antioxidant
- Linalool – aromatic compound
- Flavonoids – apigenin, luteolin
- Tannins and saponins

Uses :

- Acts as an antimicrobial and anti-inflammatory agent
- Used in treatment of cough, cold, and fever
- Helps boost immunity

5. Methods of preparation

Collection of plant material Neem extract ,
Turmeric extract , Aloe vera gel , Tulsi extract,
Stearic acid , Cetyl Alcohol , Beeswax , Liquid
paraffin , Glycerin g, Distilled water ,Methyl &
Propyl Paraben + Rose water, Fragrance
(optional).

Extraction processes

1.Extraction of Neem leaves

- ☐ Neem leaves were collected and washed with distilled water and Dried in hot air oven.
- ☐ After proper drying, leaves were powdered.
- ☐ Then 10g Neem leaves powder in 100ml water watch taken in a Volumetric flask and shaken.
- ☐ Then the solution was heated on a water bath 80 to 100 degree Celsius in 30 minutes.
- ☐ Then the filtrate or filter product obtained, which is a clear solution



or clear extract of Neem leaves, was used in the preparation.

2.Extraction of Turmeric Powder

Extraction of turmeric powder from *Curcuma longa* is a simple

Process. First, fresh turmeric rhizomes are collected and washed

Properly to remove dirt.

Then 5g Turmeric powder in 100ml water was taken in a

Valumetric flask and shaken

The solution was heated on water bath 80 to 100 degree Celsius in 30 minutes

□ Then the filtrate or filter product obtained, which is a clear solution

Or clear extract of Neem leaves, was used in the preparation.



3.Extraction of Tulsi Leaves

- Tulsi leaves were collected and washed with distilled water and Dried hot air oven.
- Then after proper drying, the leaves were powdered.
- Then 5g tulsi Leaves powder in a 50ml water watch taken in a Valumetric flask.

- Then the solution was heated on water bath 80 to 100 degree Celsius for 25 minutes.
- Then filtered the solution use by filter paper and clear extract of Tulsi Leaves

6. Formulation of Cream



1.Preperation of Oil Phase

- Bees wax, liquid paraffin, Hard paraffin and Borax are accurately Weighted and melted in porcelain.

- The temperature is maintain between 65°C to 75°C of oil phase. Aqueous phase is slowly added into oily phase at 65°C to 75°C mixed for

2.Preperation of Aqueous Phase

10 to 15 minutes. The prepared herbal extract is added into the above

- Water is heated and the temperature of the phase was maintained At 65°C to 70°C

Part slowly when temperature reached to 40°C and mixed until it get cold.

Development of Cream Formulation

The pH of Cream is kept between 5 to 7.

Formulation table:

Sr.no.	Ingredient	Quality
1	Neem Extract	3 ml
2	Turmeric extract	2.5 ml
3	Aloe vera gel	2.5 g
4	Tulsi extract	2.5 ml
5	Bees wax	3 g
6	Liquid paraffin	43 ml
7	Hard paraffin	6.5 g
8	Borax	1 g
9	Rose water	2 ml
10	Distilled water	30 ml

7. Evaluation parameters

A. Physical Evaluation

1.Irritancy:

Mark the area (1 cm²) on the 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 endemic any for an interval up to 24 h and Reported.



2.pH measurement:

0.5 g cream was taken and dispersed in 50 ml distilled water and then PH was measured by using

digital PH meter. Using a pH meter; should be skin-friendly (pH ~5.5–6.5).

3.Viscosity:

Using a viscometer; ensures good spreadability.

4.Spreadability:

Measured by the time required to spread a fixed amount of cream Between glass slides.

5.Greasiness:

Here the cream was applied on the skin surface in the form of smear And checked if the smear was oily or grease-like.

Physical Evaluation

- Colour : Pale white
- Odour : Pleasant
- Texture : Smooth
- State : Semi solid

RESULT :

The formulated polyherbal anti-acne cream showed good consistency, smooth texture, acceptable pH (skin-friendly), and good spreadability. It was stable, non-irritant, and

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showed promising anti-acne activity due to herbal extracts with antibacterial and anti-inflammatory properties.

CONCLUSION:

The study investigated the antiacne, antibacterial, antioxidant, Anti-Inflammatory Properties of Aloe vera, rose oil, Tulsi in herbal antiacne Cream formulation. Aloe vera and Neem together offer a holistic Approach to treating acne by treating inflammation, Microbial Overgrowth, sebum management, and skin repair in an anti-acne cream. The literature study highlighted the considerable number of research that Supports the use of aloe vera and Neem, tusli extract in skincare Products because of its antibacterial, anti-inflammatory, antioxidant, and Anti-acne properties. Overall, the results highlight the importance of Adding Tulsi, rose oil, aloe vera, and Neem to anti-acne cream Formulations to offer a natural, safe, effective way to treat acne.

Phytochemical

- Flavonoids
- Alkaloids
- Terpenoids
- Saponins
- Phenolic compound

viscosity, Spreadability and antimicrobial in vitro activity.

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