



FORMULATION AND EVALUATION OF POLYHERBAL ANTI ACNE GEL

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Abstract: This research aims to create and assess an herbal anti-acne gel using ingredients such as green tea leaves, nutmeg, and guava leaves. Additionally, the study investigates the presence of chemical constituents in plant extracts. The gel formulation includes carbopol-934, methyl paraben, propylparaben, polyethylene glycol and triethylamine. From the stability study results, it is evident that the formulation remains stable, with no significant changes in pH, viscosity, spread ability, consistency. The various formulations (F1 to F3) were prepared by adjusting quantities, and the selected batches were thoroughly evaluated. Notably, different concentrations of herbal extracts exhibited varying pH levels, viscosities, and spread ability.

Keywords: polyherbal , anti oxidant , anti microbial , nutmeg, Green tea leaves , guava leaves

1. Introduction Herbal Cosmetics

The word *cosmetic* was derived from the Greek word “kosmetikos” meaning having the power, arrange & skill in decorating. Herbal cosmetics have been cherished for centuries, drawing from the wisdom of nature to enhance beauty and promote well-being. Let’s delve into the fascinating world of herbal cosmetics and explore their significance. The concept of beauty and cosmetics dates back to ancient times, with civilizations using natural ingredients for adornment and health. Indian herbs, such as sandalwood, turmeric, and henna, have been revered for their skin-enhancing properties. These botanical treasures were once employed in elaborate beauty treatments within royal palaces.



ACNE

- Acne, from the Greek word “Akme” mean speak orapex, is genetic or acquired affections of the pilosebaceous units.
- The correct name for acne is Acne vulgaris. 70%-80% of patients affected by this are aged 11-25 years old.
- Acne vulgaris is characterized by the formation of inflammatory and non-inflammatory lesions of the hair follicles and sebaceous glands commonly referred to as the pilosebaceous unit.
- A slight degree of acne is typical at puberty, but a serious case can cause unsightly appearance and scarring of leaves in many cases even after treatment.
- Non inflammatory lesions may be categorized as open comedones (blackheads) and closed comedones. (White heads) Inflammatory lesions manifest themselves as papules, pustules, cysts, and nodules.
- In practical terms, acne may be grouped in terms of severity of the symptoms. eg mild, moderate, and severe.
- It is implicated in the development of inflammatory acne by its capability to activate complements and by its ability to metabolize sebaceous triglycerides into fatty acids, which chemotactically attract neutrophils.
- Staphylococcus epidermidis, an aerobic organism, and part of the natural skin flora is usually involved in superficial infections within the sebaceous unit.

Causes of Acne:

1. Hyperactive sebaceous glands. (Over active lipid secretion)
2. Hyperkeratosis (accelerated keratinization) at hair infundibulum.
3. Activity of bacteria (Propionibacterium acnes) promoting comedogenesis.
4. Cyclic hormonal levels in women.
5. Occupational hazards such as chronic exposure to chemicals and air contaminants, high humidity.
6. Other stimuli and events associated with acne include seasonal effects, excessive sexual activity, emotional or psychological stress, mechanical manipulation of the skin surface, and certain drugs such as corticosteroids.

Sequence of events in Acne:

1. Hormones, environmental factors as well as genetic susceptibility may be the cause of acne.
2. Acne occurs when hair follicles become clogged with dead skin cells and a sticky substance called sebum is produced by the sebaceous glands.
3. This excess sebum causes skin cells to stick together inside the follicle, causing an obstruction. This leads to a comedone, once bacteria nestle into the clogged pores or comedone, they release factors that cause inflammation. This causes comedones to turn into pimples and pustules.
4. Some acne lesions become so inflamed that they rupture, which forms nodules. Due to confluence of affected glands nodules form cysts which may result in scar formation after healing.

Types of acne:

1. Whiteheads
2. Blackheads
3. Papules
4. Pustules
5. Nodules
6. Cysts

HERBALGEL:**i. Herbal Gels: A Natural Approach to Healing**

Herbal gels, derived from plant materials, offer a holistic and time-tested approach to health and well-being.

Let's explore the significance of herbal gels:

ii. Traditional Wisdom:

Medicinal plants have been integral to human health formillennia. Across cultures and regions, people have relied on these natural remedies for treating various ailments.

iii. Rural Heritage:

In rural areas of developing countries, medicinal plants remain the primary source of healthcare. Their accessibility, cultural acceptance, and compatibility with the human body make them invaluable.

iv. Global Usage:

Approximately 80% of people in developing nations rely on traditional medicines for their well-being. Herbal gels, formulated from plant extracts, provide a gentle and effective way to promote healing. These gels are often used for topical applications, offering benefits such as anti-inflammatory properties, wound healing, and skin nourishment. Whether it's aloe vera, chamomile, or lavender, these botanical wonders continue to enrich our lives.

2. DRUGPROFILE

Sr.No.	Herbs	Use
1.	Green tea leaves	Reduce premature aging. Reduce redness & irritation. Treats acne. Moisturizes skin
2.	Nutmeg	Reduce Pigmentation. Treats oily skin. Promotes youthful skin. Act as a natural toning cleanser.
3.	Guava leaves	Protects skin from sun damage. Promotes healthy skin. Anti-ageing properties and prevents dry skin and scalp. Presence of vitaminA and vitaminC that have Anti oxidant property.



(1)



(2)



(3)

3. Formulation

SR.NO	INGREDIENTS	FORMULATION
1	Nutmeg extract	0.5ml
2	Green tea extract	0.4ml
3	Guava leaves extract	0.6ml
4	Carbopol-934	1.5gm
5	Polyethylene glycol	7.5gm
6	Methyl paraben	0.2gm
7	Propyl paraben	0.5gm
8	Triethylamine	q.s.

4. Material And Methods

Extraction Procedure:

- The quantity of powder was weighed accurately. Then powder was kept into n-hexane overnight (Maceration). It was filtered and dried. Then the dried powder was kept into methanol & water. Further it was filtered and it was transferred to porcelain dish. Then it was kept on the thermostatic water bath to evaporate

PREPARATION OF GEL:

- Carbopol-934 was weighed and added into sufficient amount of warm water. Then it was soaked overnight. Methyl paraben and propyl paraben were dissolved in hot water as per quantity required. Polyethylene glycol was measured as per quantity. The methanolic extracts of herbal drugs were mixed with base as per required quantity.

Evaluation Parameters

- PHYSICAL APPEARANCE:** Physical parameters such as color, odor and consistency were checked visually.
- pH:** pH measurement of the gel was carried out using a digital pH meter by dipping the glass electrode completely into the gel system to cover the electrode. The measurement was carried out in triplicate and the average of the three readings was recorded.
- VISCOSITY:** The viscosity of the prepared gels was measured with a Brookfield viscometer at 64 no. Spindle with 100 rpm at 25 °C.
- SPREADIBILITY:** The gel was weighed to be as high as 0.5 g and then placed on graph paper coated with glass. Then, we put another glass above the gel mass. The gel diameter was calculated by measuring the diameter length of several sides
- HOMOGENICITY:** All the formulations product's uniform distribution of extract in gel is confirmed by the visual appearance & by touch
- WASHABILITY:** Formulations were applied on the skin and then ease and extent of washing with water were checked manually.
- IRRITANCY TEST:** Mark an area on the left-hand dorsal surface, then the gel is applying to the specific area and time is noted. Irritancy erythema edema was checked for regular intervals up to 24hrs & reported.

5. Results and Discussion:

PARAMETERS	FORMULATION
Colour	Light Brown
Odour	Pleasant
Ph	6.67
Viscosity	2417
Spreadibility	6.2cm
Washability	Easily washable
Irritancy	No irritancy

6. Conclusion

Herbal products are much safer than synthetic products and they have no side effects. Green tea leaves, nutmeg, & guava leaves have the property to resist acne producing bacteria or to give antibacterial effect. The result shows that the extract has an effective bactericidal effect. The concentrations of herbal extract showed different pH, viscosity, Spreadability etc. The stability study and evaluation of gel showed that the formulation is quite stable.

7. References

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