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Research Article

Formulation And Evaluation of Bio-Glow Facial Elixir Using Natural Ingredients

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ABSTRACT

In recent years, the demand for herbal skincare products has grown significantly, driven by increased consumer awareness of the potential side effects of synthetic cosmetics. The present study focuses on the formulation and evaluation of a Bio Glow Facial Elixir, developed using natural, skin-friendly ingredients with the aim of enhancing skin hydration, nourishment, and radiance. Facial elixirs, lightweight formulations enriched with botanical extracts and essential oils, are designed to deliver active ingredients deeply into the skin, offering therapeutic as well as cosmetic benefits. In this research, three different formulations (F1, F2, and F3) of the Bio Glow Facial Elixir were prepared using natural components such as rosehip seed oil, aloe vera gel, glycerine, vitamin E oil, almond oil, and hyaluronic acid. Each formulation was developed by varying the concentration of key ingredients to assess their combined effects on skin health and product stability. Standard evaluation parameters, including organoleptic properties, pH, viscosity, spreadability, stability studies, and skin irritation tests, were conducted to determine the safety and effectiveness of the elixirs. Among the tested formulations, Formulation F3, containing a balanced combination of aloe vera gel and hyaluronic acid, exhibited superior results in terms of Spreadability, skin compatibility, and moisturizing effect. Stability studies indicated that the elixir remained physically and chemically stable under accelerated conditions for a specific period. No signs of irritation or adverse skin reactions were observed during preliminary application tests on volunteers. The findings of this study confirm the potential of incorporating natural ingredients in cosmetic formulations to develop safe, effective, and consumer-friendly skincare products. The Bio Glow Facial Elixir not only addresses common skin concerns such as dryness, dullness, and irritation but also provides a natural alternative to synthetic cosmetic products. Further clinical evaluations and large-scale studies are recommended to explore the long-term benefits and market feasibility of this herbal facial elixir.

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INTRODUCTION

The cosmetic and personal care industry has experienced remarkable growth in recent years, with a noticeable shift in consumer preferences toward natural, herbal-based, and chemical-free skincare products. Increasing public awareness about the potential side effects of synthetic ingredients, including skin irritation, allergic reactions, premature aging, and long-term health concerns, has driven the demand for plant-based alternatives. The modern consumer is no longer focused solely on beauty enhancement but also values the safety, sustainability, and therapeutic benefits of the products they choose. This changing trend has led to the rapid rise of cosmeceuticals, a category of skincare products that blend cosmetic and pharmaceutical benefits, often enriched with bioactive natural ingredients to improve skin health. Among the wide range of cosmeceutical products, facial elixirs have gained significant popularity for their unique ability to provide intense nourishment, hydration, and a visible glow to the skin. Facial elixirs are lightweight, concentrated formulations typically composed of essential oils, herbal extracts, vitamins, and other skin-beneficial compounds. Unlike conventional creams and lotions, elixirs possess a finer consistency, allowing them to penetrate deeper skin layers and deliver active constituents more effectively. They are designed not just for cosmetic enhancement but also to address common skin concerns such as dryness, dullness, fine lines, uneven skin tone, and loss of elasticity. Several research studies and recent publications have explored the skin-benefiting properties of natural ingredients. For example, rosehip seed oil is well-known for its rich content of essential fatty acids, antioxidants, and vitamins, which promote skin regeneration and reduce signs of aging. Similarly, aloe vera gel has been extensively studied for its soothing, anti-inflammatory, and hydrating effects, making it a staple ingredient in many natural skincare formulations. Another highly regarded ingredient, hyaluronic acid, is a naturally occurring glycosaminoglycan in the skin that plays a crucial role in moisture retention, enhancing skin plumpness, and maintaining elasticity. Recent cosmetic research highlights the effectiveness of combining these herbal ingredients in facial skincare products to improve skin radiance, texture, and overall appearance without causing adverse reactions. The significance of the present study lies in the formulation and evaluation of a Bio Glow Facial Elixir using natural, safe, and skin-friendly ingredients. While numerous commercial products make claims of offering similar benefits, many still rely on synthetic stabilizers, preservatives, and fragrances, which can compromise skin health with prolonged use. This research aims to develop a purely herbal facial elixir formulation and assess its physicochemical characteristics, spread ability, pH, viscosity, stability, and skin compatibility through standard evaluation methods. The goal is to create a product that delivers effective skincare benefits, addresses common facial skin issues, and offers a natural alternative to synthetic cosmetic products. The cosmetic and personal care industry has witnessed remarkable growth in recent years, marked by a distinct shift in consumer preferences toward natural, herbal-based, and chemical-free skincare products. With increasing awareness about the adverse effects of synthetic cosmetic ingredients, including skin irritation, allergic reactions, premature aging, and long-term toxicity modern consumers are seeking plant-based alternatives that are both effective and safe. This evolving trend has significantly contributed to the

rapid rise of **cosmeceuticals**, a specialized category of skincare products formulated with bioactive natural compounds, offering both cosmetic and therapeutic benefits. Within this domain, facial elixirs have gained particular popularity for their unique ability to deliver concentrated nourishment and hydration, promoting a healthy, radiant complexion. An *elixir*, traditionally defined as a clear, sweetened, hydroalcoholic preparation used medicinally, has been adapted in modern skincare to refer to a lightweight, fast-absorbing formulation enriched with essential oils, botanical extracts, vitamins, and skin-friendly bioactive ingredients. Facial elixirs are typically applied as part of a daily skincare routine to address specific concerns such as dryness, dullness, uneven tone, and early signs of aging, while simultaneously enhancing skin texture and glow. Notably, the United States Food and Drug Administration (USFDA) recognizes skincare products like elixirs under the broader category of cosmetics, provided that no therapeutic or drug-like claims are made. The USFDA permits the marketing of such products for enhancing appearance, moisturizing, or improving skin tone, provided they do not claim to alter the structure or function of the skin. This regulatory allowance has encouraged cosmetic manufacturers globally to introduce plant-based facial elixirs as natural, safe, and consumer-friendly skincare solutions (USFDA Cosmetic Labelling Guide, 2022). Numerous research studies and recent publications have validated the benefits of natural ingredients in skincare formulations. For instance, rosehip seed oil is rich in essential fatty acids, antioxidants, and vitamins, known to promote skin regeneration and reduce visible signs of aging. Aloe vera gel is widely valued for its soothing, anti-inflammatory, and hydrating effects. Furthermore, hyaluronic acid, a naturally occurring glycosaminoglycan, has been shown to retain moisture and improve skin elasticity. Recent studies confirm that combining these herbal ingredients in facial elixirs can effectively improve skin radiance, texture, and hydration without causing adverse reactions. The significance of the present study lies in the formulation and evaluation of a Bio Glow Facial Elixir using natural, skin-friendly ingredients. While several commercial products claim similar benefits, many continue to include synthetic preservatives, stabilizers, and fragrances that may harm the skin over time. This research aims to develop a purely herbal facial elixir and assess its physicochemical properties, spread ability, pH, viscosity, stability, and skin compatibility through standard evaluation protocols. Moreover, this study holds relevance in view of the increasing global demand for sustainable, cruelty-free, and eco-friendly skincare products. The development of herbal cosmeceuticals supports the principles of green chemistry and ethical consumerism, aligning with both market trends and consumer expectations. By contributing valuable insights into the formulation and evaluation of natural facial elixirs, this research opens avenues for future clinical studies, market introduction, and large-scale production of safe and effective nature-derived skincare solutions

MATERIALS AND METHODS:

❖ Materials

The following ingredients were selected for the formulation of the Bio Glow Facial Elixir based on their recognized cosmetic benefits and compatibility in natural skincare preparations. All ingredients used were of pharmaceutical or cosmetic grade and procured from certified suppliers. Natural Aloe Vera gel was freshly

extracted from mature leaves for use in Formulation F3. Distilled water was used as the primary solvent to avoid any microbial or chemical contamination. Each ingredient was chosen for its specific role in enhancing the stability, efficacy, and sensory attributes of the elixir.

Table 1: List of ingredients used in the formulation of Bio Glow Facial Elixir with their respective functions and quantities in F1, F2, and F3 formulations.

Sr. No.	Ingredient	Function	F1	F2	F3 (Natural Aloe Vera)
1	Distilled Water	Base solvent	45 ml	45 ml	40 ml
2	Glycerin	Humectant	10 ml	8 ml	10 ml
3	Aloe Vera Gel	Soothing & hydrating agent	12 g	10 g	15 g (Natural Extract)
4	Sweet Almond Oil	Nourishment & glow enhancer	8 ml	10 ml	10 ml
5	Rosehip Seed Oil	Antioxidant & skin repair agent	8 ml	6 ml	6 ml
6	Vitamin E Oil	Antioxidant & natural preservative	2 ml	2 ml	2 ml
7	Rose Water	Fragrance & skin calming agent	8 ml	10 ml	12 ml
8	Hyaluronic Acid	Deep hydration & skin plumping agent	3 ml	3 ml	3 ml
9	Polysorbate 20 (Optional)	Emulsifier for oil-water phase blending	2 ml	2 ml	2 ml
10	Lavender Essential Oil	Soothing, antimicrobial & aromatic agent	1 ml	1 ml	1 ml

❖ **Method:**

Each formulation was prepared by following a sequential mixing procedure:

1. The aqueous phase was prepared by mixing distilled water, glycerin, and rose water in a clean beaker with continuous stirring using a magnetic stirrer at 500 rpm.
2. Separately, the oil phase containing Sweet Almond Oil, Rosehip Seed Oil, Vitamin E Oil, Lavender Essential Oil, and Polysorbate 20 was blended until uniform.
3. Hyaluronic acid was dispersed gradually into the aqueous phase while stirring to ensure uniform hydration.
4. The oil phase was then slowly incorporated into the aqueous phase with continuous stirring to form a uniform emulsion.
5. Finally, Aloe Vera gel (freshly extracted for F3 and commercially sourced for F1 and F2) was added with gentle mixing.
6. The formulations were stirred continuously for 30 minutes to obtain a homogeneous elixir, which was transferred into amber glass bottles and stored at room temperature.

Evaluation Parameters for Bio Facial Elixir

1. **Appearance and Colour:** The physical appearance and colour of the prepared bio facial elixir were assessed visually under natural light.

2. **Odour:** The aroma of the bio facial elixir was evaluated organoleptically by a panel of ten volunteers.
3. **PH Determination: The** pH of the formulation was measured to ensure skin compatibility. One millilitre of the elixir was diluted with ten millilitres of distilled water in a 1:10 ratio and measured using a digital pH meter.
4. **Viscosity:** Viscosity was determined using a Brookfield viscometer at 25°C, employing spindle number 64 at 100 rpm.
5. **Spreadability:** Spreadability was assessed to determine the ease and uniformity of application over the skin surface. A fixed amount of the formulation was placed between two glass slides, followed by applying a standard weight of 500 grams. The diameter of the spread area was measured.
6. **Force of Application:** Although not critical for gel-based formulations, the force of application was evaluated to assess how easily the elixir spreads under normal hand pressure. A defined quantity of the elixir was applied onto a paper surface using a cotton pad. The formulation spread smoothly with minimal effort, indicating desirable application characteristics and smooth texture.
7. **Irritability Test (Patch Test):** A patch test was performed on the inner forearm of ten healthy human volunteers to assess skin tolerance and potential irritability. A small quantity of the elixir was applied and left undisturbed for 30 minutes and observation was recorded.
8. **Homogeneity:** Homogeneity was visually examined by inspecting the formulation for uniformity of ingredients.
9. **Washability:** Washability was evaluated by applying a small quantity of the elixir on the skin and rinsing with water after five minutes.
10. **Microbial Load Test:** To ensure microbiological safety, the formulation underwent microbial load testing. Samples were inoculated on nutrient agar and Sabouraud dextrose agar plates, followed by incubation at 37°C for 24 to 48 hours.
11. **Stability Study:** A stability study was conducted to evaluate the formulation's physical integrity and shelf life under various storage conditions.

Table no 2:-Stability studies

Test Condition	Temperature	Duration	Observation Frequency
Room Temperature (Control)	25 ± 2°C	30 Days	Every 7 Days
Refrigerated Condition	4 ± 2°C	30 Days	Every 7 Days
Elevated Temperature	40 ± 2°C	30 Days	Every 7 Days
Accelerated Condition	40 ± 2°C + 75% RH	30 Days	Every 7 Days

RESULT:

The formulated bio facial elixir was successfully prepared using selected botanical and cosmeceutical ingredients. The final product was evaluated for various physicochemical and organoleptic parameters, and the results confirmed that the formulation possessed desirable characteristics suitable for topical facial application.

Table No. 3– Evaluation Parameters of Bio Facial Elixir

Parameter	Standard Range/Expectations	F1	F2	F3
Colour	Clear to light tinted	Transparent	Transparent	Slightly Milky
Appearance	Smooth, homogenous	Uniform	Uniform	Very Uniform
Spreadability	5–7 cm^2/sec	5.5	6.0	6.8
pH	5.5 – 6.5 (skin-friendly)	6.3 ± 0.1	6.1 ± 0.1	5.9 ± 0.1
Viscosity	150 – 250 cps	170 cps	185 cps	210 cps
Absorption Time	≤ 60 sec	45 sec	40 sec	30 sec
Irritability Test	No redness/swelling	No	No	No
Perfume Stability	No significant change for 4 weeks	Slightly Faded	Good	Excellent
Force of Application	Should glide smoothly	Moderate	Easy	Very Easy
Washability	Easy with water	Good	Good	Excellent
Phase Separation	No separation in 30 days	Slight at week 4	No	No
Foam Stability	Stable for >1 minute	Moderate (45 sec)	Good (60 sec)	Excellent (80 sec)
Antimicrobial Test	Inhibition against microbes (zone)	Mild (4 mm zone)	Moderate (6 mm zone)	Strong (9 mm zone)
Stability (30 days)	Stable texture and properties	Slight colour change	Stable	Highly Stable

DISCUSSION:

The Bio Facial Elixir is a carefully crafted skincare solution designed to hydrate, soothe, and rejuvenate the skin. By combining natural ingredients like glycerine and aloe vera with cosmeceuticals such as rosehip seed oil and hyaluronic acid, this elixir offers a powerful, multi-functional treatment. Glycerin attracts moisture, while aloe vera calms irritated skin. Rosehip seed oil promotes skin regeneration and helps reduce fine lines, and hyaluronic acid plumps and hydrates, leaving the skin smooth and radiant. This formulation provides immediate relief for dry, sensitive skin while offering long-term anti-aging benefits. It's safe, effective, and suitable for daily use, delivering visible results without harsh chemicals. The Bio Facial Elixir not only nourishes the skin but also promotes sustainability with ethically sourced ingredients, making it a responsible choice for those seeking both beauty and environmental care.

CONCLUSION:

In this study, we successfully formulated and evaluated a Bio Facial Elixir designed to improve skin hydration, soothe irritation, and offer anti-aging benefits using a blend of natural and cosmeceutical ingredients. The thoughtful combination of glycerine, aloe vera, rosehip seed oil, and hyaluronic acid resulted in a lightweight, skin-friendly formulation suitable for daily use and various skin types. The elixir demonstrated excellent moisturizing properties, a soothing effect on sensitive skin, and the potential to visibly improve skin texture and appearance with regular

application. Its natural, clean,and ethical ingredient profile makes it a promising addition to modern skincare routines that value both effectiveness and safety. While our findings are encouraging, further clinical studies and user feedback would help establish its long-term benefits and market readiness. Overall, this Bio Facial Elixir reflects the growing demand for simple, natural, and effective skincare products, combining traditional herbal knowledge with modern cosmeceutical innovation.

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