

FORMULATION AND EVALUATION OF ROSE TONER

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Abstract:

The formulation and evaluation of a rose toner aim to develop a natural skincare product that can effectively cleanse and hydrate the skin while providing soothing and anti-inflammatory benefits.

This project focuses on utilizing rose water as the primary ingredient due to its well known therapeutic properties, including skin rejuvenation, hydration, and its mild astringent effects. The toner is formulated with a blend of rose water, glycerine, and other natural preservatives to ensure stability and efficacy.

Several batches of the toner are prepared with varying concentrations of active ingredients to optimize the product's performance. The evaluation of the rose toner includes sensory testing, pH level determination, stability testing, and skin compatibility assessments.

Results indicate that the toner effectively maintains skin moisture, reduces irritation, and promotes a refreshed appearance. The final product demonstrates excellent potential as a gentle yet effective skincare solution for daily use, particularly for individuals with sensitive skin.

INTRODUCTION

Definition of Toner:

A facial toner is a liquid skincare product applied to the face after cleansing and before moisturizing. It helps remove residual dirt, oil, and makeup, tightens pores, refreshes the skin, and restores the skin's natural pH balance. Depending on the ingredients, toners can provide hydrating, astringent, or soothing effects. They are a vital part of many skincare routines, especially for maintaining clean and balanced skin.

Definition of Rose Water:

Rose water is a fragrant, water-based solution made by distilling rose petals, most commonly from *Rosa damascena*. It is rich in antioxidants and possesses anti-inflammatory, antibacterial, and hydrating properties. Due to its mild and soothing nature, rose water is widely used in cosmetic and dermatological formulations, especially for sensitive and acne-prone skin.

Need for Herbal Formulations in Cosmetics:

There is an increasing preference for herbal and natural cosmetic products due to concerns about the potential side effects of synthetic chemicals. Herbal ingredients are typically safer, better tolerated by the skin, and environmentally friendly. They also offer multiple skin benefits such as hydration, nourishment, and protection against environmental damage. The incorporation of herbal extracts in skincare products has gained popularity for promoting healthy and naturally glowing skin.

Importance of Rose Toner:

Rose toner is a type of facial toner that primarily uses rose water as its base. It can be enriched with natural ingredients like glycerine, aloe vera, witch hazel, and niacinamide to enhance its skincare benefits. These ingredients work synergistically to hydrate, soothe, tone, and

brighten the skin. Rose toner is especially beneficial for reducing redness, calming irritation, and maintaining skin moisture without clogging pores or causing dryness.

Ideal properties of Rose Toner:

[1] **Natural Ingredients** — Should be made with pure rose water or rose extract, free from harsh chemicals, alcohol, or artificial fragrances.

[2] **Hydrating & Soothing** — Helps to calm irritated skin and provide lightweight hydration without clogging pores.

[3] **Balances Skin pH** — Maintains the skin's natural pH balance, supporting a healthy skin barrier.

[4] **Antioxidant-Properties**—Contains antioxidants that help protect skin from environmental damage and promote a healthy glow.

Physiology Of Human skin:

Epidermis: The superficial layer of the skin which comprises stratified squamous epithelium is the epidermis. The thickness of these layers differs. It is thick on the palms of hands and soles of the feet. Its deeper layer consists of interstitial fluids that provide oxygen and other nutrients.

Dermis: This layer is tough and elastic. It consists of collagen fibres which provide tensile strength to the skin. The major cells present in this layer are fibroblasts, macrophages and mast cells. Underlying this layer areolar tissue is present which contains adipose tissue.

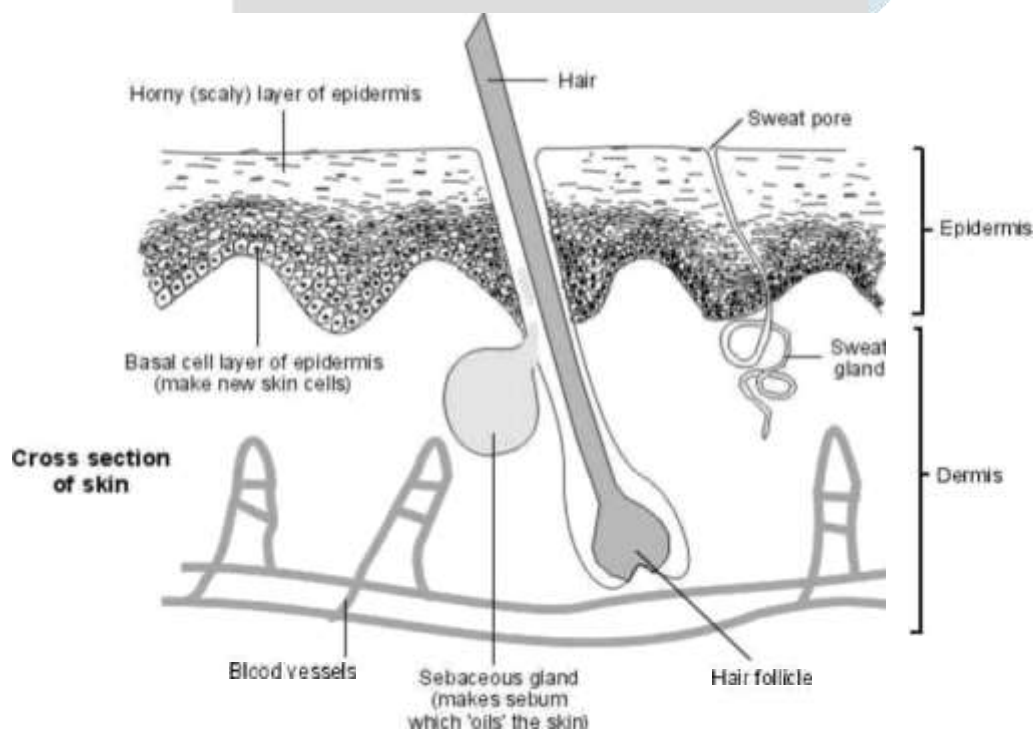


Fig.1 Layers of Skin

Subcutaneous tissue: "this layer consists of secretory epithelial cells. They secrete an oily substance called sebum into hair follicles.

They are present on all parts of the body except palms of hands and soles of feet.

Types of Toners:

1. Bracers or skin fresheners: This is a mild toner. The toner containing glycerine and water (humectant). Humectants hydrate the epidermis. The most well-known example of it is rosewater. It works best on skin types that are normal, dehydrated, and sensitive.

2. Skin toners: Typically stronger, skin tonics contain a small amount of alcohol (20%), water, and an agent known to humectants. Orange flower water is an effective example of a skin tonic. It is okay to use skin tonics on oily skin.

3. Acid toners: Usually comprising alpha hydroxy acid or beta hydroxy acid, acid. The most often utilized alpha hydroxy acids are glycolic, lactic, and mandelic acids; these acids are most suited for exfoliating the skin's surface. The most popular beta hydroxy acid that is most effective at exfoliating the skin's deeper layers is salicylic acid.

4. Astringents: The strongest type of toner, astringents have a high percentage of alcohol (20–60%) together with water, antiseptics, and humectants. When they utilize a lot of alcohol, these can remove the skin's surplus protective lipids, which can cause irritation and damage to the skin.

Advantages of rose toner:

1. Hydrates and refreshes the skin.
 2. Soothes irritation and reduces redness.
 3. Contains antioxidants that protect against damage.
 4. Gently tightens pores and removes impurities.
 5. Restores natural pH balance.
 6. Has a calming, pleasant rose scent.
 7. Suitable for sensitive and all skin types.
 8. Helps control excess oil without over-drying.
 9. Prepares the skin to absorb serums and moisturisers better.
 10. Can help reduce acne due to its mild antibacterial properties.
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Common Ingredients Used In Facial Toners:

Ingredient Type	Definition	Function in Toners	Examples
Water (Aqua)	Purified or distilled water is usually the main base of the formula.	Acts as a solvent to dissolve other ingredients.	Purified water, distilled water
Botanical Extractions	Natural plant-based substances included in formulas.	Soothing, hydrating, and antioxidant properties.	Rose water [*] , Aloe vera, Chamomile, Green tea, Witch hazel
Humectants	Moisture-attracting ingredients.	Attract and retain moisture in the skin and help maintain hydration.	Glycerin, Hyaluronic acid, Urea
Astringents	Help tighten pores and reduce oiliness.	Help tighten pores and reduce oiliness, often used for oily or acne-prone skin.	Witch hazel, Alcohol, Citric acid
Exfoliants (Acids)	Mild acids used to remove dead skin cells.	Provide skin renewal and smooth texture.	AHA (glycolic acid, lactic acid), BHA (salicylic acid)
Soothing Agents	Ingredients that calm skin irritation.	Reduce redness, inflammation, and support skin repair.	Allantoin, Bisabolol, Niacinamide
Antioxidants	Substances that fight free radicals.	Protect the skin from environmental stress and aging.	Vitamin C, Vitamin E, Green tea extract
Fragrances / Essential Oils	Added for scent or mild benefits.	Improve sensory appeal, sometimes offer aromatherapy.	Rose oil, Lavender oil (<i>Note: can irritate sensitive skin</i>)
Preservatives	Chemicals that prevent microbial growth.	Extend product shelf life and maintain safety.	Phenoxyethanol, Parabens, Sodium benzoate
pH Adjusters	Ingredients that control acidity.	Balance the toner's pH to match the skin's natural level (4.5-5.5).	Citric acid, Sodium hydroxide

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General Ingredients Used In Rose Toner:

Ingredients	List of ingredients
1. Rose Water	
2. Glycerine	
3. Aloe Vera	

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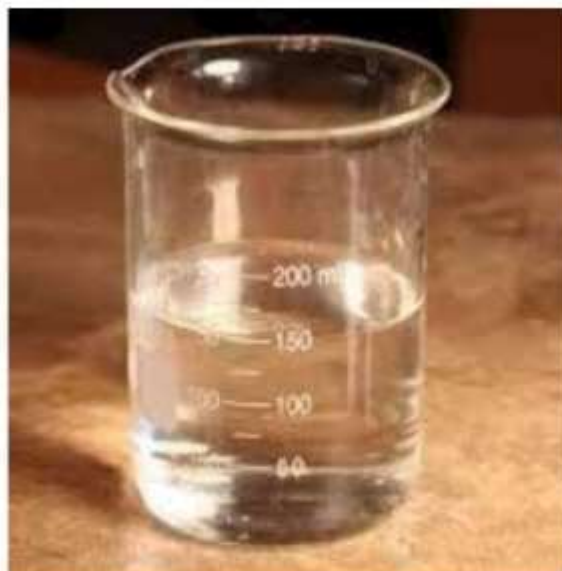
4. Vitamin E



5. Essential Oil [Rose Oil]



6. Distilled Water



Method of Preparation:

1. Sanitize all equipment and containers.
2. In a clean beaker, add rose water (50 ml) and distilled water (25 ml).
3. Add (10 ml) of glycerine and (10 ml) of aloe vera gel, stirring continuously to dissolve.
4. Add (5 ml) of Vitamin E and 2-3 drops of essential oil.
5. Mix well using a glass rod until fully homogeneous.
6. Pour the solution into a sterilized spray bottle using a funnel.
7. Label with date and store in a cool, dark place.

Evaluation:

1. Organoleptic properties: We observed the colour, Odor, and the appearance of the herbal face toner's organoleptic properties.

2. PH measurement: PH testing is used in herbal toners to determine their acidity or alkalinity levels. This information is important because it helps ensure that the tone is within the desired pH range for optimal skin health and effectiveness. The 25 ml formulation was placed in a beaker with graduations and the calibrated pH meter was placed in the solution for a period, and the measurement was taken.

3. Homogeneity: The presence and appearance of any clots were evaluated visually to determine homogeneity. **Light exposure testing:** The product is left in its original packaging in a light chamber or in the sun for 48 hours to examine the discoloration.

4. Skin irritation: The dorsal skin of the left hand was sprayed with a small amount of the toner and kept there for a while; the results indicated that the skin was not inflamed. **Skin Conditioning:** The skin appears hydrated, moisturized, smooth, and supple following the application of toner.

5. Surface tension: They can determine if the toner will go across the skin as an even layer or if it will form patches or droplets. Obtaining this knowledge is essential in ensuring correct toner use and a consistent experience for the user. The formulation was collected using the stalagmometer, and the surface tension was determined.

6. Temperature variation: Over the duration of 30 days, the formulation was subjected to varying temperatures at ambient temperature (25°C), refrigerator temperature (5°C), and oven temperature (45°C) to check suitability.

7. Perfume stability: The formulation herbal face toner was applied after 30 days, to record fragrance,

RESULT:

The prepared rose toner was evaluated for its physical appearance, pH, clarity, microbial safety, and stability over time.

The toner appeared as a clear, light pink liquid with a pleasant, natural rose fragrance. It had a water-like consistency, which made it easy to apply on the skin. The pH of the toner was found to be around 5.4, which is within the ideal range for facial skin and helps maintain the skin's natural balance.

Parameter Evaluation	Observation
Appearance	Clear, Light pink
Odor	Mild, floral (rose-like)
pH	5.4
Viscosity	Light to moderate
Transparency	Clear to slightly cloudy
Stability	Moderate

Conclusion:

The rose toner was successfully formulated using natural and herbal ingredients such as rose water, aloe vera, essential oil, vitamin E, and glycerine, which are known for their skin-soothing, hydrating, and antioxidant properties. The formulation was designed to be gentle, alcohol-free, and suitable for all skin types.

The physicochemical evaluations showed that the toner had an ideal pH range (4.5–6.0), was clear, had a pleasant aroma, and was non-viscous, making it appropriate for daily skin application. The stability studies under different storage conditions revealed that the formulation was physically and chemically stable over time, with no significant changes in pH, colour, or appearance, and no phase separation observed.

Microbial testing indicated the formulation was free from harmful microbial contamination, and the preservative system was effective in ensuring product safety over a 4-week period.

Overall, the rose toner demonstrated excellent potential as a natural skincare product. It can be considered a safe, effective, and eco-friendly alternative to synthetic toners available in the market.

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