



FORMULATION AND EVALUATION OF ALUM TONER SPRAY FOR ANTI-ACNE EFFECT

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ABSTRACT:

Alum helps to fade acne scars and dark spots. It can reduce scars, meliorate texture, and evens out fine lines. It also known as fitkari or phitkari. Alum is an inorganic emulsion that's usually made up of water moles, aluminium or other essence and sulphates. The general chemical formula for alum is $XAI(SO_4)_2 \cdot 12H_2O$. People exercise astringents to reduce the appearance of pores on the face. Alum has a range of topical usages similar as an antiperspirant deodorant. It has a tangy property that helps the cells to condense and removes redundant oil painting from the face. Acne is one of the most common skin problems in teenagers and youthful grown-ups, and causes significant emotional torture for numerous. Alum is also bacteriostatic, making it useful as a preservative. It can reduce bacterial growth in particular care products and extend their shelf life. In alum present the different chemical constituents in like aluminium, potassium and Sulphate. It acts as anti-acne, dark spot reduction, anti-Inflammatory, tightens skin. Toner used alum act as astringent, Glycerin act as humectant and the rose water act as a soothing agent. Alum is an operative remedy for face cases. Applying alum on the affected area helps to tautens the face due to its Kashaya (tangy) property.

KEYWORDS: Face Toner, Acne, Alum, Glycerin, Rosewater

INTRODUCTION

From the ancient days, people use naturally available resources which offers to enhance their beauty. ^[1] It's known that cosmetics are the products used to enhance and conduct beauty to the stoner. ^[2] In earlier days, naturally available constituents were generally used as cosmetics, but with the passage of time and enhancement in wisdom, several chemicals came into actuality that's said to conduct or enhance beauty, therefore used as cosmetics. ^[3] Using these chemical- rested products can conduct beauty for a particular time but it harms our skin when used for a long time. Numerous dangerous goods have been noticed due to the operation of chemical- rested products, therefore now day's cosmetics assiduity substantially focuses on the medicine of herbal products. ^[4] Whether it's seasonal change to pollution, there is several causes that can spark acne. The papules may dematerialize enough, but what stays ahead are acne scars! Fighting acne is easy but dealing with those scars and dark spots isn't that easy at each. They're the adversary of those who want clear and radiant skin! If you're tired of trying in- clinic treatments and are looking for a easy result, also we suggest you use alum! Alum helps to fade acne scars and dark spots. It can reduce scars, meliorate texture, and evens out fine lines. It also known as fitkari or phitkari.

ALUM

Alum is an inorganic emulsion that's usually made up of water moles, aluminium or other essence and sulphates. Alum is a doused double-barreled sulphate swab of aluminium. The general chemical formula for alum is $XAl(SO_4)_2 \cdot 12H_2O$. Alums can do as minerals. For illustration alunite, leucite. Aluminium chance in an alum gravestone is a veritably fragile portion of it aprox 5, but the most important is that when you went down the gravestone to apply it on your body the aluminium portion is estimated to lower than 0.5, that's to enunciate below all the security limitations describes by legit authorities. A tangy antecedents apkins to contract, making them condense or strain. People exercise astringents to reduce the appearance of pores on the face. Alum has a range of topical usages similar as an antiperspirant deodorant. It also features as component in certain productions, similar as styptic pencils, which support cure cuts from paring. In cosmetics, it generally refers to potassium alum. Other manners of alum carry soda pop alum, ammonium alum, chrome or chromium alum ultramodern wisdom prospect. Alum, is a constitutionally being component considered to be good for tensing the face. It has a tangy property that helps the cells to condense and removes redundant oil painting from the face. Alum is exercised in the shape of gels or creams for face care.

Ayurvedic prospect: Alum is an operative remedy for face cases. Applying alum on the affected area helps to tautens the face due to its Kashaya (tangy) property.

PROPERTIES OF ALUM

Alums tend to have an astringent and acid taste. They're odourless, colorless and frequently set up in the form of a white crystalline grease paint. Alums are largely answerable in water (especially in hot water). They generally solidify in the regular octahedral form when rained from waterless results. The alum chargers can be refrigerated if heat is applied. Alums generally live in the form of a white and transparent crystalline form. Its boiling point is around 200 degrees celsius. Its melting point is 92.5 degrees celsius. Its viscosity is 1.725 g/cm³. They react acid to litmus test.

USES OF ALUM

Some of the common uses of alum are: Alum is used in the incinerating and pickling process. Used in the tanning process of leather. As stated above used extensively in the coagulation and flocculation process of water treatment. Acts as an acidulating agent in cuisine. Used as a drying agent in a cloth company. It's used as an antiseptic agent and adjuvant in vaccines. Acidic element of incinerating greasepaint. Alums retain the property of anti-inflammatory agents and are generally used in the gargling process to reduce teeth goo inflammation and pain. It's set up as a component in some toothpaste.^[5] Four main factors beget acne redundant oil painting (sebum) product. Hair follicles congested by oil painting and dead skin cells Bacteria Inflammation. People with darker skin types are more likely than are people with lighter skin to witness these acne complications. Leveled skin (acne scars) and thick scars (keloids) can remain long-term after acne has healed. Skin changes after acne has cleared, the affected skin may be darker (hyperpigmented) or lighter (hypopigmented) than before the condition passed.^[7]

PROPERTIES OF ALUM FOR THE SKIN

Potassium alum has several parcels that companies use in particular care products. Originally, it's a tangy, meaning it causes the skin to contract or shrink. Astringents can reduce the size of pores and strain the skin. Alum is also bacteriostatic, making it useful as a preservative. It can reduce bacterial growth in particular care products and extend their shelf life. In the product of vaccines, alum is also a common adjuvant Trusted Source, which means it enhances the vulnerable system's response to the shot. Still, scientists aren't sure how it does this.

BENEFITS OF ALUM FOR THE SKIN

People have used alum medicinally for a long time from trusted source. Still, it's unclear if it has any long-term benefits for skin health, as there are no scientific studies on this content. important of what people know about alum's parcels come from anecdotal validation or observation. Scientists know that alum inhibits the growth of several common strains of bacteria, including Staphylococcus. A 2014 laboratory study proved this by taking mariners from the armpits of five virile actors, growing the bacteria in agar plates, and exposing them to alum. Still, this study only showed how well alum works in laboratory conditions on agar

plates rather than on mortal skin.^[8]

TONER

In cosmetics, skin color or simply color refers to a embrocation or marshland designed to cleanse the skin and shrink the appearance of pores, generally used on the face. It also moisturizes, protects, and refreshes the skin.^[9]

Colors can be applied to the skin indifferent ways

1. On a cotton round. (This is the most constantly used system.)
2. Scattering on to the face.
3. By applying a alcohol reek facial mask — a piece of reek is covered with color and left on the face for a many twinkles.

TYPES OF TONERS

1. Skin bracers or fresheners: These are the mildest form of colors.

Skin mixers: These are slightly stronger and contain a small quantity of alcohol (upto 20), water, and a humectant component.

2. Acid Colors: These are a strong form of color that generally contains alphahydroxy acid and or beta hydroxy acid.

3. Astringents: These are the strongest form of color and contain a high proportion of alcohol (20 – 60), antiseptic constituents, water, and a humectant component.

EFFECTS OF TONER ON SKIN-

In the history, skin color was a typical product used as an alternate sanctification agent for removing residual makeup after regular facial sanctification or used for removing redundant sebum secreted from facial skin to prepare the skin before treatment. Toners may be distributed into alcohol- grounded or non-alcohol-based colors for colorful skin types similar as unctuous skin, sensitive skin, or combination skin ^[10] currently, the diversity and frequency of the products beget skin colors to be employed more as cosmeceutical products with several purposes; for illustration, rehydrating skin, balancing skin pH, tensing skin pores, relieving vexation, and also antiseptis.

ADVANTAGE OF MIST FORMULATION:

Transdermal spray (TS) is believed to have further superiority over the conventional TDD systems in the light of its safety, and tolerability. ^[11] As compared to conventional TDD systems (patches, gel, and ointment). TS is readily available for operation, provides flexible medicine lozenge delivery, and reduces the circumstance of skin vexation and the cases need not clean their hands after the operation. ^[11,12,13] Because of unpredictable detergent content, the TS system creates a fast- drying and non-occlusive sub caste on the skin after its operation and helps rapid-fire medicine saturation through the skin. ^[14]

MECHANISM OF ACTION OF THE SPRAY FORMULATION:

When the button on the top of the spray bottle is pressed, it pumps the grooved button. This pumping action forces the air from the nozzle to the dip tube. Now there is a drop in the pressure of tube due to pressure falls in the tube and the liquid is forced up from the tube. The liquid now leaves the nozzle through the actuator as small mist droplets due to pressure applied on skin through force penetrating in the skin. ^[15]

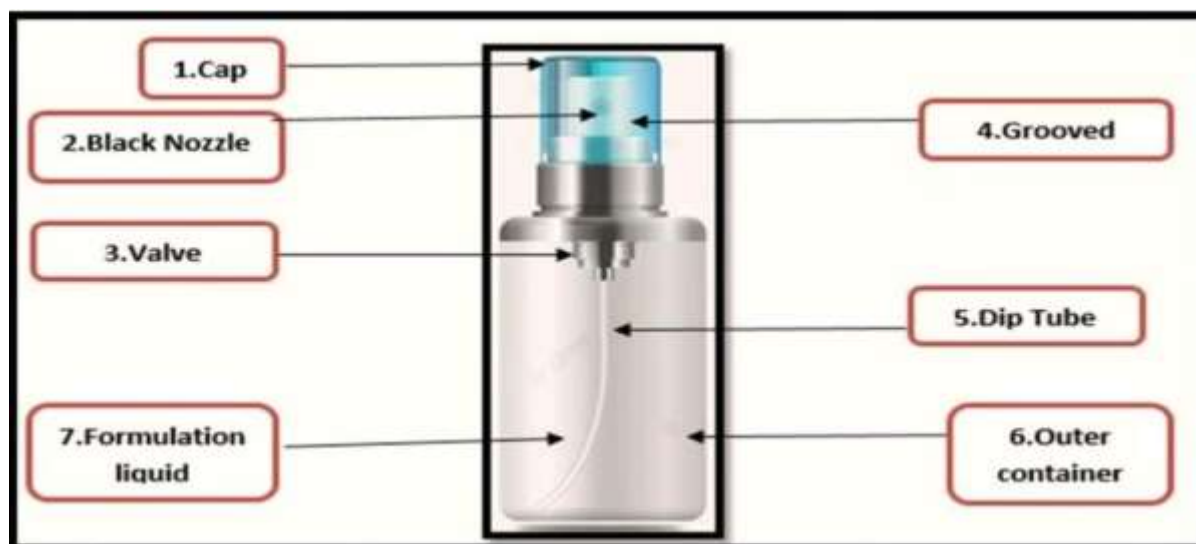


Fig A: DESIGN OF MIST SPRAY LAB SCALE TRIALS

LAB SCALE TRIALS:

Trial 1: Alum, Honey and Water Formulation

Sr. No	Ingredients	Quantity	Role of used ingredient
1	Alum Powder	2 gm	Astringent
2	Honey	2 ml	Cleanser, Exploiting agent
3	Water	Q.S.	Vehicle

Procedure

Water is boiled on a low flame and is added with given amount of alum powder in it. Stir properly to form homogeneous solution. When uniform mixture is formed solution kept for cooling. After cooling add given amount of honey. Stir uniformly and add water till quantity sufficient. When formation formed strain the mixture into spritzer bottle.



Observation of Trial 1:

The formulation formed didn't show good odour and also showed change in consistency of the toner after an interval of time. This resulted in instability of the solution and therefore the formulation was discarded.

Stability Test 1: Formulation unstable.

Result 1: This formulation was rejected due to the above observations.

Trial 2: Alum, Orange Oil and Rose Water Formulation

Sr. No	Ingredients	Quantity	Role of used ingredient
1	Alum Powder	4 gm	Astringent
2	Orange Oil	1 ml	For glowing skin
3	Rose Water	Q.S.	Vehicle

Procedure

Water is boiled on a low flame and is added with given amount of alum powder in it. Stir properly to form homogeneous solution. When uniform mixture is formed solution kept for cooling. After cooling add given amount of orange oil. Stir uniformly and add rose water till sufficient. When formation formed strain the mixture into spritzer bottle.



Observation of Trial 2:

The formulation formed results in layer formation due to the combination of orange oil and rose water. It also showed mild irritation to the skin. The formation when applied showed stickiness and uneasy to wash off. This resulted in instability of the solution and therefore the formulation was discarded.

Stability Test 2: Formulation unstable.

Result 2: This formulation was rejected due to the above observations.

Trial 3: Alum, Rose Water and Water Formulation

Sr. No	Ingredients	Quantity	Role of used ingredient
1	Alum Powder	4 gm	Astringent
2	Rose Water	20%	Smoothing Agent
3	Water	Q.S.	Vehicle

Procedure:

Water is boiled on a low flame and is added with given amount of alum powder in it. Stir properly to form homogeneous solution. When uniform mixture is formed solution kept for cooling. After cooling add given amount of rose water. Stir uniformly and add water till sufficient. When formation formed, strain the mixture into spritzer bottle.



Observation of Trial 3:

The concentration of alum was increased for better results on skin. But resulted in skin irritation and dryness of skin. Therefore, the above formulation was discarded.

Stability Test 3: Formulation unstable.

Result 3: This formulation was rejected due to the above observations.

Trial 4: Alum, Glycerin, Rose Water and Water Formulation

Sr No	Ingredient	Quantity	Role of used ingredient
1	Alum Powder	2 gm	Astringent
2	Glycerin	7 ml	Humectant
3	Rose Water	20%	Soothing Agent
4	Water	Q.S.	Vehicle

Procedure:

Water is boiled on a low flame and is added with alum powder in it. Stir properly to form homogeneous solution. When uniform mixture is formed solution kept for cooling. After cooling add given amount of glycerin and 20% rose water. Stir uniformly and add water till quantity sufficient. When formation formed, strain the mixture into spritzer bottle.



Observation of Trial 4:

The formulation was found to be completely stable and effective.

Stability Test 4: Formulation stable.

RESULT 4: This formulation was approved and further studied and evaluated.

INGREDIENTS USED IN A TOPICAL SPRAY FORMULATION:

Sr. No	Ingredient	Image	Active Constituent	Use
1	Alum powder		Aluminium Potassium Sulphate	Anti Acne, Dark spot reduction, Anti Inflammation, Tightens Skin
2	Glycerin		Alpha Hydroxy Acids like Lactic Acid, Glycolic Acid, Hyaluronic Acid, Propylene Glycol, Butylene Glycol, Sorbitol	Humacent
3	Rose Water		Phenethyl alcohol, Citronellol, Geraniol	Smoothing agent, Lightening Skin Pigmentation, Anti- Aging Activity
4	Distilled Water		Vehicle	Vehicle

Table 5: Ingredients Used in A Topical Spray Formulation FORMULATION IMAGES:



IMAGE1



IMAGE 2



IMAGE 3



IMAGE4

Table 6: Formulation Images

DIRECTIONS:

1. Rinse hands and face with warm water.
2. Cleanse face with facewash.
3. Pat skin dry.
4. Spray toner to skin and allow some time to remain on the skin.
5. Wipe out the with cotton balls or clean cloth.
6. Use when needed.

CAUTION:

For external use only.

If swallowed, seek medical attention.

Avoid contact with eyes and mucous membranes.

In case of eye contact, flush with coldwater. Keep out of reach of children.

THE INTERPRETATION OF RESULTS ON HAND:


SUBJECT A	SUBJECT B
Before	
	
After	
	

Table 7: The Interpretation of Results on Hand

STABILITY TESTING OF FORMULATION:




1.Stability test at the day of manufacture:	2. Stability test after 1 month of manufacturing:	3.Stability test after 3 mont
		
Observation: Formulation Stable.	Observation: Formulation Stable.	Observation: Formulation Stable.

Table 8: Stability Testing of formulation

METHODS FOR EVALUATION OF VARIOUS PHYSICAL PARAMETERS:

1) PH

The formulation 25ml was taken in a beaker with graduations and now the calibrated pH met er was made stand in the formulation for some time and reading was recorded.

2) Skin irritation

small amount of the mist toner was sprayed on left hand dorsal skin and kept for some time; result was found non-irritant on the skin.

3) Stickiness

The mist particles were not found to be much sticky in nature.

4) Skin conditioning

The appearance of the skin after application of the mist was seen to be smooth, hydrated and supple.

5) Temperature variation

The formulation was exposed to different temperatures at for 3 months to check the stability and was found to be completely stable.

6) Light Exposure

The product is exposed to direct sunlight in its original packaging to see and discoloration of formulation occurs. No discoloration was seen.

7) Washability

The formulation was found to be completely washable in nature.

8) Odour test

The formulation showed pleasant odour.

9) Uniformity

The formulation showed single phase and completely uniform nature.

Table No: 9 Evaluation Parameters

LABEL:

Sr. No	EVALUATION PARAMETER	RESULT
1	PH	5
2	Skin irritation	Non-irritant
3	Stickiness	No stickiness found
4	Skin conditioning	Smooth and hydrated
5	Temperature variation	Stable in all condition
6	Light Exposure	No discoloration formed
7	Washability	Washable
8	Odour test	Pleasant odour
9	Uniformity	Uniform

ALUM TONER

Anti-Acne Toner for All Skin Type



Enriched with natural products
like alum glycerin and rose water
for acne free glowing skin...

100 % NATURAL PRODUCT

Ph BALANCE

NON ALCOHOLIC

60ML

Made with alum, glycerin and rose water, the toner is an ideal final-stage cleanser for individuals with reactive skin conditions such as acne, dark spots, inflammation and redness.

Alum, a powerful antioxidant rich in astringent properties, will help to soothe irritated skin and reduce swelling. Glycerin will help to retain moisture. The rose water is used for lightening skin pigmentation and anti-aging activity. The toner also reduces pore diameter, exfoliate dead skin cells, and remove any remaining dirt, oil, or bacteria inside pores. When used daily, the toner also provides an excellent preventive measure against blackhead formation.

Directions:

1. Rinse hands and face with warm water.
2. Cleanse face with facewash.
3. Pat skin dry.
4. Spray toner to skin and allow some time to remain on the skin.
5. Wipe out the with cotton balls or clean cloth.
6. Use when needed.

**ACTIVE
INGREDIANTS:**

Alum powder:
0.71gm(astringent
) , Glycerin:
0.125ml
(humectant), Rose
water:20%
(smoothing
agent) Water: Q.S

CAUTION: For external use only. If swallowed, seek medical attention. Avoid contact with eyes and mucous membranes. In case of eye contact, flush with cold water. Keep out of reach of children.

RESULTS:

TRIAL	TESTS	RESULT
1.	Alum, Honey and Water	Solution Unstable
2.	Alum, Orange Oil and Rose Water	Solution Unstable
3.	Alum, Rose Water and Water	Solution Unstable
4.	Alum, Glycerin, Rose Water and Water	Solution Stable

CONCLUSION:

The observations from the spray tonner formulation were very satisfactory. All the ingredients used were economic and freshly purchased from the local market. The main purpose behind the mist toner formulation was to achieve better cooling and maximum better effect on the skin which was found to be satisfactory. And the main intension of the formulation was to easily carry the formulation and easy application on the skin wherever and whenever needed. The studied formulation proved to be satisfactory and were tested with different evaluation parameters. After application of the toner, there was no irritability, rashes and showed better cleaning effect. It is found that the prepared formulation is physiochemically stable and possessed characteristics of a standard cosmeceuticals' formulation for skincare routine. The mist spray formulation gave more effectiveness to this formulation because it spraying small particles on the skin with a certain amount of force makes the formulation to penetrate the small pores of the skin in a better way than any other forms such as gel, creams or lotion.

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