

**FORMULATION AND EVALUATION OF FACE SERUM
CONTAINING BEE VENOM AND ALOE VERA GEL**

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ABSTRACT

Facial wrinkles and skin aging are undesirable outcome of photodamage and ultraviolet (UV) rays. Currently no effective strategies are available to delay skin aging process. Aloe Vera, glycerin and honeybee venom face serum is a highly concentrated cosmetic product. When using aloe Vera we get not only a quick cosmetic effects but also psychological satisfactions, serum has a property of rapid absorption and ability to penetrate into deeper layer of the skin. Aloe Vera gel is commonly used to treat different skin disease, sun burn, minor cuts, insect bites, and used as wound healing, anti-inflammatory, anti-bacterial and anti-fungal effect. Bee venom is a defensive toxin produced by bees and is reported to increase blood

flow and collagen production. The face serum was evaluated for its physiochemical parameters, pH, globule size, consistency. The stability study results showed that there was no change in visual appearance, homogeneity and globule size.

KEYWORD: Cosmetic, anti-inflammatory, anti-bacterial, anti-oxidant, face serum.

INTRODUCTION

Serums is a skin care product containing a gel or lightweight lotion or moisturizing consistency and have ability to penetrates deeper to deliver active ingredients into the skin. A good skin Serum may provide your skin a firmer, smoother texture, make pores appear smaller and increase moisture levels.^[1] Whether it is moisturizer, anti-wrinkle or anti-aging product or skin serum, all these products should contain antioxidants, cell-communicating

ingredients and skin-identical ingredients. All skin type needs these ingredients to be as healthy as possible. Gel and liquids preparations are best for oily and combination skin, serums and light lotions are best for normal to dry skin, more emollient lotions and moisturizing creams are best for dry to verydry skin. Texture is all about skin type- but the brilliant ingredients for healthy skin the same for everyone, regardless of product, texture or personal preference.^[2] Skin is a protective and largest organ of body which is struggling to heal and repair itself 24 hours, but sometimes skin can develop dry patches for many reasons like UV rays, pollutants, makeup left on overnight can cause irritation or allergic reactions. Aloe Vera and bee venom both have an unique anti-aging formulations to maintain healthy fresh looking skin. These products are useful in various skin conditions like psoriasis, shingles and other associated with itching, in addition- cuts, abrasions and burns are said to be benefit from topically applying the leaf's gel to the affected area.^[3-5] The polysaccharides present in Aloe Vera have excellent moisturizing property and when mixed with essential oils, it makes an excellent skin soothing moisturizer and sun block lotions. Due to its soothing and cooling qualities Ayurveda recommends *Aloe Vera* for a number of skin disorders. Aloe Vera extract have antibacterial and anti-fungal activities, which may help in the treatment of minor skin infections also.^[6]

MATERIALS AND METHOD

Aloe Vera plant, Lyophilized Bee venom and sandal wood oil was purchased from sigma Aldrich, Glycerin IP. All other chemical used were of suitable analytical grade.

Method of Extraction

Aloe Vera plant was collected from the herbal garden of Vishveshwarya group of Institutions and identified. Aloe vera gel was collected, homogenized at 1200 rpm under mechanical homogenizer. The Homogenized gel was further filtered with a vacuum filter to get a clear and transparent gel.^[7]

Emulsion Preparation

Emulsion (o/w) was prepared as per the formula given below. Oily phase consisting Olive oil, sandal wool oil, Vitamin E and emulsifiers span 80 and tween 20 was triturated together till 10 minutes to get a homogenous solution. At the same time aqueous phase was prepared by mixing aloe vera gel, bee venom, glycerine, and small quantity of distilled water homogeneously. The oily phase was added to aqueous phase drop by drop under mechanical stirring at 2500 rpm to get a oil in water based biphasic emulsion.

Table 1: Formula for face serum.

SL. NO.	INGREDIETS	PERCENTAGE %
1	Lyophilized bee venom	9%
2	Aloe Vera gel	50%
3	Glycerin	25%
4	Span 80	2%
5	Tween 20	1%
4	Sandalwood oil	01%
5	Preservative	0.01%
6	De mineralized water	QS to 100 ml

Characterization of Emulsion and stability studies

Rheological Parameters

Emulsions are non Newtonian system so the viscosity of the formulation was determined by multipoint viscometer (Brookfield Viscometer) at 100 rpm, some amount of the serum was taken in a beaker and the spindle was dipped in it for about 5 minutes and then the readings were noted.^[9]

Color and Appearance

The color and appearance of the formulation (aloe Vera face serum) was observed visually which appeared translucent white in color.^[9]

Homogeneity

The formulation prepared had even distribution of the extracts made. The homogeneity of the preparation was confirmed visually by the absence of any particulate matter and also feeling the product by touch.^[9]

pH of the serum

A pH meter was calibrated using a standard buffer solution. Nearly 1 ml of the serum was properly weighed and dissolved in 50ml of distilled water and finally its pH was calculated.^[9]

Globule size determination

The prepared serum was properly analyzed under microscope to identify and confirm the globule size. One drop of the serum was placed on a glass slide and was diluted with water, it was covered with coverslip and was finally observed under microscope to determine globule size using stage micrometer.

Ash Value: Product was taken in a flat –bottom platinum dish and ashing was done at 600 °C in muffle furnace.

Spreadability: Spreadability denotes the extent of area to which the gel readily spreads on application to skin or the affected part. The bioavailability efficiency of a cream also depends on its spreading value.

Stability Studies

The formulation and preparation of any pharmaceutical or cosmetic product is incomplete without proper stability studies of the prepared formulation. This is done in order to determine the physical and chemical stability of the prepared product and thus determine the safety of the product under accelerated conditions, where the product is subjected to elevated temperatures and moisture as per the ICH guidelines. A short term accelerated stability study was carried out for the period of 3 months for the prepared formulation. The samples were stored under the following conditions of temperature as 3-5⁰C, 25⁰C RH=60%, 40⁰C ±2% RH= 75%. The samples were withdrawn on monthly intervals and were analyzed for various parameters.^[10]

RESULTS AND DISCUSSION

Aloe Vera face serum formulation was light green viscous liquid preparation with a smooth homogenous texture and glossy appearance. The formulation was re-dispersed within a seconds. After use, it felt like emollient, slipperiness and no residues were formed and easy to wash out.

Physical appearance: Serum formulation was light green in color, viscous liquid preparation with a smooth homogenous texture and glossy appearance.

pH: The pH of formulation was found 6.2. As the skin having an acidic pH around 4.1-6.7, this range of formulation is suitable for skin.

Globule size determination: The globule size was found to be in range of 0.1-0.3 µm. This range of particles enhance the penetration power of the formulation.

Stability studies: The formulation was undertaken stability studies for physical and chemical change. No considerable variations in properties of the formulation were observed.

Table 2: Stability Study observations.

TEMPERATURE	EVALUATION PARAMETERS	OBSERVATION (Months)			
		0	1	2	3
3-5°C	Visual Appearance	Translucent White	Translucent White	Translucent White	Translucent White
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good
Room Temperature (25°C RH=60%)	Visual Appearance	Translucent White	Translucent White	Translucent White	Translucent White
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good
40°C±2°C RH=75%	Visual Appearance	Translucent White	Translucent White	Translucent White	Translucent White
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good

After feel: The serum after distribution amongst individuals and their application, had a soothing and pleasant effect as informed to us by the individuals, indicating that it had an emollient and moisturizing action and also it was non-irritating and non-sensitive to the skin.

CONCLUSION

The aim of the study was to formulate different herbals into a serum for moisturizing and glowing activity on skin. Cosmeceuticals are skin-care products that cater for both cosmetics and drugs.^[11] In this serum aloe Vera was used. The fresh aloe Vera gel from the inner central part (parenchyma) of the leaf often has a very good action in acne, pimples, eczema and other skin problems, burns due to heat, sun exposure and in treatment of radiation dermatitis. Aloe Vera contains number of vitamins and minerals that have a strong moisturizing capacity and anti-aging effects to maintain healthy and fresh looking skin. The gel stimulates cell growth and as such enhances the restoring of damaged skin. So this serum can be used treat skin related problems.

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