

Formulation and Evaluation of Cucumber Aloe Cream

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Abstract: Face creams are semi solids preparation used for improving the complexion of the face. The main aim of this research work is to prepare the face creams using different herbs and the prepared face cream are evaluated for the efficacy. The formulated face creams are evaluated for the various parameters like organoleptic properties, pH, stability, consistency, homogeneity and appearance.

A face moisturiser is a lotion, or cream emulsion, ointment or balm formulated with emollients that help skin stay hydrated. Moisturisers hydrate the surface layers of the skin. Their main skin benefit is that they seal the skin, locking in moisture and nutrients, while protecting the skin from environmental irritants. From cosmetic purposes, Pharmaceutical creams have a variety of applications such as cleansing, beautifying, altering appearance, moisturising etc. to skin protection against bacterial, fungal infections as well as healing cuts, burns, wounds on the skin.

These semi solid preparations are safe to use by the public and society. The human skin is easily vulnerable to injury but it has the capability to heal on its own. However, the natural healing process can take time and there is also risk of infection especially in the early stages of injury. In such cases, medicated creams can be applied to the site of injury to speed up the healing process as well as protect the wound from infection.

Keywords: Face creams

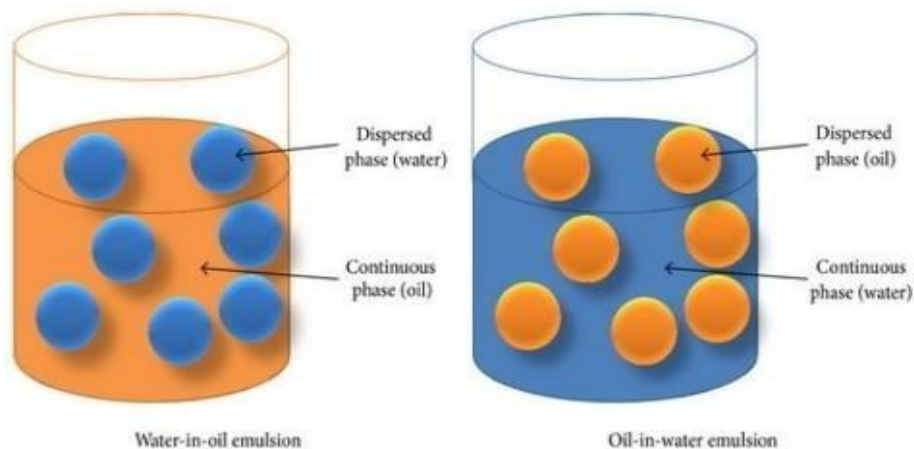
I. INTRODUCTION

The word 'Cosmetic' derived from a Greek word – 'kosmetikos' that means to adorn. From that time Any materials used to beautify or promote appearance is known as cosmetic. The word "cosmetics" actually stems from its use in Ancient Rome. They were typically produced by female slaves known as "cosmetae". Which is where the word "cosmetics" stemmed from. Cosmetics are used to enhance appearance. Makeup has been around for many centuries(1). The first known people who used cosmetics to enhance their Beauty were the Egyptians. Makeup those days was just simple eye colouring or some material for the body. Now-a-days makeup plays an important role for both men and women. The importance of cosmetics has increased as many people want to stay young and attractive. Cosmetics are readily available today in the form of creams, lipstick, perfumes, eye shadows, nail polishes, hair sprays etc. Other cosmetics like face Powder give glow to the skin after applying the base cream. A Cream is a preparation used for the application to the skin. Creams may be considered as pharmaceutical products and cosmetics used in variety of skin conditions.(2) Creams are a semi solid preparation of Oil and Water.

O/W· W/OO/W Creams which are composed of small droplets of Oil dispersed in continuous Water Phase. O/W types are More comfortable and more acceptable cosmetically(3,4) they are less greasy, easily washed off using Water. W/O Creams which are composed of small droplets of Water dispersed in continuous Oil Phase. W/O types Are more difficult to handle they are also moisturising(5,6) more as they provide oily barrier which reduce water Loss from stratum corneum.(7,8)

The use of herbal ingredients in cosmetic formulations has gained significant attention due to increased consumer demand for natural and skin-friendly products. Among the most studied herbal components, cucumber (*Cucumis sativus*) and aloe vera (*Aloe barbadensis miller*) stand out for their therapeutic properties, especially in dermatological applications.





Cucumber (*Cucumis sativus*)

Cucumber is widely known for its cooling, soothing, and anti-inflammatory properties. Its high water content (about 95%) helps in skin hydration, while ascorbic acid and caffeic acid contribute to reducing skin irritation and swelling. Studies have shown that cucumber extract can help lighten dark spots, reduce puffiness, and provide a refreshing effect on the skin (Sharma et al., 2014).

Aloe Vera (*Aloe barbadensis miller*)

Aloe vera is a succulent plant known for its wound healing, moisturizing, and anti-inflammatory properties. The gel extracted from its leaves contains vitamins (A, C, E, and B12), minerals, enzymes, and amino acids. Aloe vera has been reported to enhance collagen synthesis, improve skin elasticity, and promote cell regeneration (Surjushe et al., 2008). Its soothing effect is beneficial for irritated or sunburned skin.

Previous Formulations

Several formulations involving herbal extracts, particularly cucumber and aloe vera, have been studied for their cosmetic potential. For instance, herbal creams incorporating these extracts have been found effective in reducing dryness, improving skin texture, and minimizing the appearance of acne and blemishes (Kaur et al., 2017).

Importance of Herbal Creams

The replacement of synthetic chemicals with herbal ingredients reduces the risk of allergic reactions and long-term skin damage. Herbal creams are biodegradable and eco-friendly, aligning with sustainable beauty trends (Pandey et al., 2016).

Gaps in Literature

While individual benefits of cucumber and aloe vera are well-documented, few studies have evaluated synergistic effects in cream formulations. This presents an opportunity for in-depth study on how these two components can work together for enhanced cosmetic benefits.

Formulation and Evaluation of Cucumber Aloe Cream

To formulate a stable topical cream incorporating cucumber extract and aloe vera gel using suitable excipients.

2. To evaluate the physicochemical properties of the formulated cream, including:

pH Viscosity

1 Spreadability Homogeneity Appearance

2. To assess the stability of the cream under different storage conditions (e.g., temperature, humidity, light).

3. To determine the skin compatibility and potential irritation using suitable in-vitro or in-vivo models.



- 4 To study the moisturizing and soothing effects of the cream on human volunteers or through suitable testing methods.
5. To ensure the microbiological safety and shelf life of the formulation.

The raw materials which are used in the manufacturing of skin creams include:

This is the most important and widely used raw material in any cream formulation. These are the Cheapest and easily available. In skin creams, water is used as solvent to dissolve other ingredients of Creams. Water, which is free of any toxins, pollutants, microbes, etc. is used in preparation of creams

Oil, fats and waxes and derivatives there form comprise an essential portion of Creams. Waxes act as an emulsifier, fats act as a thickener and oil acts as a perfuming agent, preservative, etc. According to its function, oil may be of two types' mineral and glyceride.

Mineral oil consists of hydrocarbons derived from petroleum oil. Mineral oil is clear, odourless, And heavily refined oil and it is widely used in cosmetics. Mineral oil rarely causes allergic reactions and It cannot become solid and clog pores of the skin. It is lightweight and inexpensive, it helps to reduce water Loss from the body and keeps the body moisturised. A Examples: Light liquid paraffin Heavy liquid paraffin.

Glyceride oil is mostly vegetable oils. Examples of glyceride oils are Almond oil, arachis oil, castor oil, coconut oil, olive oil etc. Vegetable oil: Form a barrier on the surface of The skin and slow down the loss of water, helping to maintain plumpness of skin. Vegetable oils may Also be used to increase the thickness of the lipid or oil portion of cream or personal care products. E.g. Almond oil, germ oil, avocado oil, sunflower oil etc.

Which are used in preparation of cream includes beeswax, carnauba wax, ceresin, spermaceti, etc. Waxes are used in cosmetics because it helps to keep an emulsion from separation of oil and liquid component. These waxes also increase the thickness of the lipid portion and sticks on the surface of the skin.

Different types of fats are used in the preparation of creams. These materials can be obtained from Animals, plants or mineral origin. Glyceride oils and fats may be of animals or vegetable origin. They consist Of combinations of higher fatty acids and glycerin. When saponified they form soap, or fatty acid and Glycerin, depending upon the process used. The most common of these fatty acids are lauric, margaric, Palmitic, stearic, and saturated. Oleic acid is liquid and the most unsaturated fatty acid.

It is derived from wool fat of a sheep. Lanolin are of two types- the hydrous lanolin contains Between 25%- 30% water. Anhydrous lanolin has a point of 38°C-42°C and has a slight odour. These Ingredients act as a lubricant on the skin surface, which gives the skin a soft and smooth appearance. Lanolin helps to form emulsion and blends well with other substances used in cosmetic and personal care Products. Colours: Before the development of modern technology, colours primarily came from substances Found in nature such as turmeric, saffron, indigo, etc.

Emollients, also commonly referred to as moisturisers are products that help to soften skin Or to treat skin that has become dry. Most emollients are forms of oil or grease, such as mineral oil, squalene and lanolin. They would increasing the ability of the skin to hold water, providing the skin with a layer Of oil to prevent water loss, and lubricating the skin.

Perfume is a substance that imparts a scent or order, including a sweet and pleasant smell. Examples Of natural perfumes used in creams are- White Blossoms: Rosy Dreams Orange Blossom.

Vitamins play an important role in maintaining the physiological function of the whole body and The skin. Vitamin A, B, C, E etc. are generally used in formulation of the creams



The use of preservatives in cosmetics is essential to prevent alteration caused by Microorganism and contamination during formulation, shipment, storage and consumer use. Antioxidants can Also be used to protect alteration caused by exposure to oxygen. Synthetic preservatives when used in low Concentration effectively preserve the products.

Aloe barbadensis Mill, Aloe chinensis Bak.

Aloe is the dried juice leaves of Aloe vera, Aloe barbadensis Miller, Aloe ferox.
- Liliaceae



1. It is one of the important herbs in Ayurveda. Z
2. It has a wide range of uses in skin conditions. Such as burns, psoriasis, cold sores, hydrates skin, treats acne, tightens pores, smooth textured skin, etc.
3. It can Also be for fever, itching, inflammation.
karite nut butter, shea butter tree.
derived from the seeds of the African Shea tree vitellaria paradoxa Sapotaceae

1. It works as an excellent moisturizer, heals dry skin, smooth and soft skin, and clear healthy Skin.
- 2.abolic processes Involved in healing of any wounds.
sea cucumber, cuke, greenback

Cucumber is obtained form the fruit of cucumis sativus -Cucurbitaceae

1. It should smooth and calm the skin, it also has skin repairing properties and can be used to treat Blemishes, dark spots.
2. The anti-inflammatory property of Cucumber soothes your body at the deepest level Thereby helping fade blemishes.



- 1) Cucumber Herbal extract 30ml
- 2) Aloe vera Herbal extract 30gm



- 3) Coconut oil Emolient 5ml
- 4) Vitamin E Anti oxidant 2ml
- 5) Xanthan Gum Moisturizer 8gm
- 6) Methyl paraben Preservatives 2ml
- 7) Glycerin Moisturizer 1ml
- 8) Water Vehicle Q.S



1. Wash and clean fresh aloe vera leaves .
2. Cut the leaves into pieces and take out the pulp from them.
3. Now blend the pulp of aloe vera (foams appears) and wait till the foam disappears.
4. Take the small quantity of Aloe Vera gel which is formed after blending and add Xanthan Gum, stir the Mixture and keep it for 30 min to 1 hrs. for Hydration.
5. After this, add the hydrated mixture into the whole Aloe vera gel and leave it for 4 to 5 hrs.to set(put it In the refrigerator for better result).
6. Finally Aloe vera gel was prepared.
1. Wash and clean the Cucumber properly,now grate the whole Cucumber.
2. Squeeze the extract of Cucumber (water of cucumber) in a vessel.
3. Take a measured amount of Aloe Vera gel and add a measured amount of Cucumber extract in it.
4. In another container take, Glycerine, ,vitamin E ,coconut oil as given in Table and mix them.
5. Add this drop – drop wise into the Cucumber Aloe Vera mixture and stir vigorously.
6. Now separately take the measured amount of Methyl paraben and add water as quantity sufficient.
7. Add solution of Methyl Paraben and water into the mixture of cucumber Aloe vera and stir it vigorously As no lumps were left.
8. Leave it for 10 – 20 mins to set, hence the herbal face cream was prepared.

Ingredients	Category	Quantity
1) Cucumber	Herbal extract	30ml
2) Aloe vera	Herbal extract	30gm
3) Coconut oil	Emolient	5ml
4) Vitamin E	Anti oxidant	2ml
5) Xanthan Gum	Moisturizer	8gm
6) Methyl paraben	Preservatives	2ml



7) Glycerin	Moisturizer	1ml
8) Water	Vehicle	Q.S

(cucumber) (Cucumber juice)

(fig.cucumber extract) (Fig. Aloe cucumber moisturising cream)

The Face Cream thus obtained was evaluated for its organoleptic properties like colour, odour and state. The Appearance of the cream was judged by its colour and roughness and graded.

The Formulated Creams were inoculated on the plates of agar media by streak plate method and a control was Prepared by excluding the cream. The plates were placed into the incubator and were incubated at 37°C for 24 Hours. After the incubation period(50-52), plates were taken out and checked for the microbial growth by Comparing it with the control.

Test:In the mechanical test cream samples were inserted into a centrifuge tube at a speed of 3750 RPM for half an Hour or 5000 to 10000 RPM for 15 Minutes then observed whether a separation existed or not.



(cucumber)



(Cucumber juice)



(fig cucumber extract)



(Fig. Aloe cucumber moisturising cream)

Homogeneity of the prepared creams was confirmed by the visual appearance and by touch.



Emolliency, slipperiness and amount of residue left after the application of the fixed amount of cream was found To be good.

Under Microscopic observation the disperse globules appear red in colour and the ground is colourless the Cream prepared is O/W type. The dye test confirms that all formulations were O/W type emulsion cream(53)

All the cream formulations applied on the skin were easily removed by washing with tap water.

All formulations show no redness edema inflammation and irritation and during irritancy studies these Formulations are found to be safe to use for the skin.

5 volunteers were selected for the following studies. All the preparations are applied and observed for 1 month. After 1 month a skin test has been done that there is no pigmentation and skin gets whitened

To assess the formulation stability, the stability studies were done. Each formulation was stored at 4°C room Temperature and 40°C temperature for a month and observed for physical stability like colour

The colours were changed especially on the temperature of 40°C whereas in other temperatures it is stable.

Evaluation Paramet	Formulated Face Cream
1) Color	Light green
2) Odour	Decent
3) Transparency	Opaque
4) Stability	Stable equilibrium
5) Ph Value	5.5
6) Texture	Smooth
7) Viscosity	Medium
8) Drying time (sec)	10

Results:

The Cucumber-Aloe face cream was successfully formulated using herbal ingredients including aloe vera gel and cucumber extract. The prepared cream was evaluated for various physicochemical and stability parameters. The observations are summarized below:

Physical Appearance: The cream was white, smooth, and had a pleasant odor. No phase separation was observed.

pH: The pH was found to be 6.5 ± 0.2 , which is within the acceptable range for topical skin products and suitable for all skin types.

Viscosity: The viscosity of the cream was measured at 13,200 cP, indicating good consistency for easy application.

Spreadability: The spreadability was found to be 18.5 g·cm/sec, which confirms good spreading behavior on the skin.

Washability: The cream was easily washable with water without leaving any residue.

Skin Irritation Test: No signs of redness, itching, or irritation were observed in volunteers, indicating the formulation is safe for topical use.

Stability Studies: The cream remained stable for one month under room temperature with no change in color, odor, or consistency.

Microbial Load Test: The cream passed microbial testing, confirming it is free from bacterial and fungal contamination.



Conclusion

From the research of study it was concluded that poly herb containing F4 formulation shows better results than Other formulation containing single herb. Thus F4 formulation removes skin pigmentation and improves face Complexion. Creams are semisolid formulations widely acceptable by the society. This formulation was prepared By natural extract to which it give glow from bottom of your skin. skin is the most accessible part of the Body and as such is also highly vulnerable to injuries. More advanced technologies and methods will be used For preparation, formulation and evaluation of creams in coming years. It is a semi solid preparation which Contains good stability and nourishment to the skin

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