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Formulation And Evaluation Of Aloe - Cucumber Face Cream: A Detox To Summer Skin

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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: Formulation ; Evaluation ;Herbs ;Cosmetic ;Hydration.

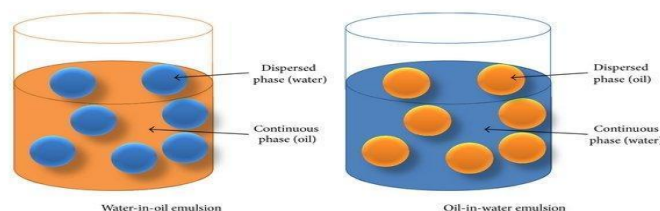
INTRODUCTION:

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 are also applied to the mucus membrane such as vagina, rectum. 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/O



O/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)

GENERAL INGREDIENTS USED IN SKIN CREAMS

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

Water: 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. Water can also form emulsions, it depends upon how much quantity of water is used in the formulation and sometimes referred to as oil-in-water emulsions and sometimes water-in-oil emulsions depending upon the quantities of oil phase and water phase used(9-12).

Oil, fates and waxes: 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: 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 number of mineral oils are used in cream formulation. Examples: Light liquid paraffin Heavy liquid paraffin(13,14)

Liquid petroleum Glyceride oil: 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.(15)

Waxes: 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 components. These waxes also increase the thickness of the lipid portion and sticks on the surface of the skin.

Fats: 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 popular unsaturated fatty acid. More specially the oil most commonly used in other cosmetics are olive oil, almond oil, sesame oil, peanut oil, cocoa butter fat, mutton tallow, lard and beef stearine.(16-18)

Lanolin: 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. After the 19th century, colours were made in the laboratory and were found to be much more stable with greater colouring intensity. They also could be produced without using plants harvested in the wild.[19]

Emollients: 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 work by 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.[20]

Humectants: These are important multi-functional ingredients found in most skin care formulations. Humectants are hygroscopic organic compounds. These are the materials that can absorb or retain moisture. These have many benefits such as moisturization, exfoliation, etc. Examples of humectant are glycerin, Hydroxyethyl urea, betaine, sodium PCA, Sodium-L-Lactate, etc.[21]

Perfumes: 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[22]

Vitamins: 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.

Preservatives: 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.[23]

AYURVEDIC MEDICINES FOR WOUND HEALING

1. Aloe Vera (A.): It is one of the important herbs in Ayurveda. 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. It can also be for fever, itching, inflammation.[24-28]



2. Peppermint (Mentha piperita): It is a popular herb and it is used in numerous forms. Peppermint oil when applied on the skin provides a cooling sensation. It is used in aromatherapy, bath preparation, mouth washes, toothpaste and topical preparations. It is used to calm pruritus, relieve irritation and inflammation and wound healing.[29-32]



3. Turmeric (Curcuma longa): In India, turmeric is used as spices as well as a colouring agent. It is having various medicinal properties as anti-cancer, antioxidant, anti-inflammatory, antibacterial, antiviral, wound healing, etc.[33-35]



4. Jatropha Curcas: It is known for various medicinal properties. It is having antimicrobial, anti-cancer, anti HIV, anti-bacterial, wound healing, etc.[36]

5. Honey: Honey has been used since ancient times as a traditional medicine. Honey is an antioxidant, anti-tumor, anti-inflammatory, anti-microbial and cardiovascular potentiating agent. It is also used as a wound dressing and wound healing agent. Honey has been used to treat adult and neonatal postoperative

infections, burns, necrotizing fasciitis, infected and non healing wounds and ulcers, boils, pilonidal sinus, venous ulcer and diabetic foot ulcers.[37-40]



6. Marigold (*Calendula officinalis*): It is a short lived aromatic herbaceous perennial plant. It is a flower/plant which has been used for centuries for ornamental purposes, cosmetic and medicinal purposes. Calendula is one of the top herbs and can be taken orally, it is one of the most powerful antioxidants and it is one of the strongest antiviral herbs. It is having anti-inflammatory, calms muscle spasm, heals ulcers, wounds, and hemorrhoids, aids menstruation, contains antimicrobial and antiviral components, improves oral health.[41-44]



7. Ghee: The butter which is obtained from the cow milk has been claimed to have many medicinal properties like it is cooling in energy, rejuvenating, bestows lustre and beauty, enhances memory and stamina, increases the intellect, and promotes longevity. It is having antimicrobial, immune stimulant, antioxidant and hepatoprotective activity. The process of wound healing by cow ghee is faster than antibiotics. Cow ghee contains several saturated and unsaturated fatty acids which are capable of taking part in metabolic processes involved in healing of any wounds.[45-48]









8. Shea butter : It works as an excellent moisturiser, heals dry skin, smooth and soft skin, and clear healthy skin(49)







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



Table No. 1
List of ingredients used in formulation

S.No	Ingredients	Category	Quantity Taken
1	Cucumber 	Herbal extract	10 gm
2	Aloe Vera 	Herbal extract	20 gm
3	Coconut oil 	Emollient	5 ml
4	Vitamin E 	Antioxidant	2 ml
5	Xanthan Gum 	Moisturizer	8 gm
6	Methyl Paraben 	Preservatives	2 ml
7	Zinc Oxide	Skin whitener	2 gm

			
8	Glycerine 	Moisturizer	1 ml
9	Propylene Glycol 	Moisturiser + Binder	1 ml
10	Water 	Vehicle	Q.S

Procedure:**Preparation of Aloe Vera gel**

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.

Preparation of herbal face cream

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 Propylene Glycol, Glycerine, Zinc Oxide,vitamin E ,coconut oil as given in table No. 1 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.

Evaluation:**Organoleptic Evaluation:**

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.

Test for microbial growth in formulated Cream:

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.

Stability 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.

Homogeneity:

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

After Feel:

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

Dye Test:

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)

Removal:

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

Irritancy Test:

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.

Skin Whitening Test:

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.

Stability Studies (Evaluation):

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.

Report of Stability Studies:

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

RESULT:**Herbal cream formulation.**

The formulation is formulated by mixing equal amounts of quantity of each ingredient. It contains the natural Phytochemical and phytoconstituent with their pharmacological properties. The final product was packed and prepared properly.

The light weight and cooling effect of this formulation plays a miracle to the skin, it detoxes the whole skin and provides nourishment to the skin. It acts as an anti tanning ,anti dark spot ,and provides Hydration to the skin. This formulation is passed due to its following Physicochemical properties; these are given below in the table no.2.

Table No.2
Physicochemical properties of the formulation

Evaluation parameter	Formulated face cream
Colour	Light green
Odour	Decent
Transparency	Opaque
Stability	Stable equilibrium
pH value	5.5
Texture	Smooth
Viscosity	Medium
Drying time(seconds)	10

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. The 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. The demand for herbal constituents based creams was also increasing day by day(54-55).

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