



# FORMULATION & EVALUATION OF MULTIPURPOSE POLY-HERBAL CREAM

**Correspondance Authors:** <sup>1</sup>Ms. Neha Goel, <sup>2</sup>Mr. M. Harshit Rao, <sup>3</sup>Dr. Prabhakar Budholiya, <sup>3</sup>Dr. Anurag Jain

1. Assistant Professor, Department of Pharmaceutical Science and Technology, AKS University Satna (M.P.)
2. AKS University Satna (M.P.)
3. Government Medical College, Ratlam (M.P.)

**Abstract:** Our study indicated that the prepared polyherbal face cream was o/w type emulsion, hence can be easily washed with plane water that gives better customer compliance. There is a growing demand for herbal cosmetics in the world market and they are invaluable gifts of nature. Therefore, we tried to make a polyherbal face cream containing the extract of Aloe vera, Turmeric and Lemon juice. The formulation found to be more stable, while remaining formulations were not stable and resulted in breakdown of the emulsion when stored for long time. Herbal cosmetics are the preparations used to enhance the human appearance. The aim of the present research was to formulate the herbal Cream for the purpose of Moistening, Nourishing, lightening & Treatment of various diseases of the skin. Different crude drugs; Aloe vera, Turmeric and Lemon juice were taken. Accelerated stability testing of two final sample has been conducted in the environmental chamber with temperature  $25 \pm 10$  °C and humidity  $60 \pm 10\%$  RH. All the products were found to be stable with no sign of phase separation and no change in the color. The patch test for sensitivity testing has also been done and no evidence of skin irritation and allergic signs. Thus herbal cosmetics formulation is safe to use was proved and it can be used as the provision of a barrier to protect skin.

**Keywords:** Aloevera, Turmeric, Herbal cream, Moistening, Nourishing.

## INTRODUCTION

The Word 'Cosmetic ' derived from a Greek Word 'Kosmestic ' that means to adron. From that time any material use to beautification or promoting appearance is known as cosmetic. The word " Cosmetic" actually stems from its use in Ancient Rome. They were typically produced by female slaves known as "cosmetic" which is where the word "cosmetics " stemmed from. Cosmetic are used to enhance appearance. Makeup has been around for many centuries. The first known people who used cosmetics to enhance their beauty were the

Egyptian . Makeup those days was just simple eye coloring or some material for the body .Cosmetic are readily available today in the form of cream , lipstick, perfumes,eye shadows , nail polishes, etc.

## CREAMS

Creams are the topical preparations which can be applied on the skin. Creams are defined as viscous liquid or semi-solid emulsions of either the oil- in-water or water-in-oil types' dosage forms which consistency varies by oil and water Dosage forms which consistency varies by oil and water. Creams are used for cosmetic purposes such as cleansing, beautifying, improving appearance, protective or for therapeutic function. These topical formulations are used for the localized effect for the delivery of the drug into the drug into the underlying. Creams are considered as pharmaceutical product as they are prepared based on techniques developed in the pharmaceutical industry; unmedicated and medicated cream are highly used for treatment of various skin conditions or dermatoses. Creams can be ayurvedic, herbal or allopathic which are use by people according to their needs for their skin conditions.

## TYPES OF SKIN CREAMS

### Water –in-oil [o/w] cream

Which are composed of small droplets of oil dispersed as in a continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the aqueous phase is termed an oil-in-water [o/w] emulsion.

### Water –in-oil [w/o] cream

Which are composed of small droplets of water dispersed in a continuous oily phase. When water is the dispersed phase and an oil the dispersion medium, the emulsion is of the water – in-oil [w/o] type.

## CLASSIFICATION OF CREAMS

**All the skin creams can be classified on different basis:**

1. According to function, e.g. cleansing foundation,, etc.
2. According to characteristics properties, e.g. cold creams, vanishing creams,etc.
3. According to the nature or type of emulsion.

Types of creams according to function, characteristic properties and type of emulsion:

1. Makeup cream [o/w emulsion]:

- a] Vanishing creams.
- b] Foundation creams.

2. Cleansing cream, cleansing milk, cleansing lotion [w/o Emulsion]

3. Winter cream [w/o emulsion]:-

- a] cold cream
- b] moisturizing creams.

4. All purpose cream and general creams.

5. Night cream and massage creams.

6. Skin protective cream

7. Hand and Body Cream

### I. Make-Up Cream

These are mainly o/w types of emulsion. It is cream –based product which leaves a smooth hydrated finish on the skin. It nourishes skin and basically sweat- resistant.

**A. Vanishing creams:-** They are called vanishing creams because they seem to disappear when rubbed onto the skin.

**B. Foundation creams:-** These cream serve as a foundation base for make- up. It acts as an adherent base for application of make-up powders.

**C. Cleansing creams:-** These creams are used for body cleaning purposes and it is used for personal hygiene and beautification which is important for cosmetics.

### II. Winter creams :-

These are w/o type of formulation and this formulation oil content will be more than water content.

These creams are mainly used for chapped and dry skin.

**A. All purpose creams and general creams:-** These creams are used more nowadays than before. These creams are somewhat oily but non- greasy type and can spread on the skin easily.

**B. Night cream or massage creams:-** These creams are mainly used for the nourishing the skin or as treatment to dry skin. Creams which are generally applied on skin and left for few or several hours over night are mainly known as night creams.

### III. Wound healing process

Wounds may be defined as a loss or breaking of cellular and anatomic or functional continuity of the deep skin tissue or the living tissue. Wound may be produced by physical, chemical, thermal, viral or the immunological trauma to the surface of the skin. Wounds are generally termed as physical injury that cause opening and breaking of the skin. Wounds can be classified mainly on the basis of infliction and causative agent as:

A. Closed wound

B. Open wound

Wound healing involves platelet aggregation, blood clotting, formation of fibrin, alteration in the ground substance. Healing process cannot be complete until the disrupted surface are vigorously knit by collagen and finally treated by scars formation. These are used directly as in crude or raw form of drug for the treatment of chronic diseases.

## 2. EXPERIMENTAL SECTION

**a. Aloe vera-** any aloe of the species *Aloe vera*, the fleshy leaves of which yield a juice used as an emollient ingredient of skin lotions and for treating burns. It is one of the important herbs in Ayurveda . It is

having wide range of use in skin conditions such as burns, cold sores etc. Aloe vera gel is used as a moisturizer, to reduce pimple and acne and also used for treatment of burn wounds. Aloe vera is a substance that contains vitamins and minerals and is often used in cosmetics. Aloe vera is also the name of the plant from which this substance is extracted.

**b. Turmeric-** In India ,turmeric is used as spices as well as a coloring (32-33)a tropical Asian zingiberaceous plant, *Curcuma longa*, having yellow flowersand an aromatic underground stem the powdered stem of this plant, used as a condiment and as a yellow dye.

**c. Rose water.** It is having various medicinal properties as Rose water gives healthy glow to the skin and good for boosting hydration. Rose water is a flavored water made by steeping rose petals in water. Additionally, it is the hydrosol portion of the distillate of rose petals, a by-product of the production of rose oil for use in perfume. Rose water is also used to flavour food, as a component in some cosmetic and medical preparations, and for religious purposes throughout Asia and Europe.

#### **d. Lemon juice**

Lemon contains anti-fungal properties. It cleanses the pores and repairs skin.

#### **CREAM FORMULATION:**

Oil in water [o/w] emulsion based cream [Semi-solid formulation] was formulated. The emulsifier [Stearyl alcohol] and other oil soluble components [White petroleum jelly] were dissolved in the oil phase [Part-A] and heated to 75 °C. The preservative and other water soluble components [Boric acid , propylene glycol, sodium lauryl sulphate] were dissolved in the aqueous phase [part B] and heating to 75 degree C. After heating, then added in [Rose water ,lemon juice, turmeric and Aloe vera] the aqueous phase was added in portions to the oil phase with continuous stirring until cooling of emulsifier took place .

The formula for the cream is given in table 1.

**Table No. 1: Composition of Cream**

S. No.	Ingredients	Formulation-1	Formulation-2	Formulation-3	Formulation-4
1.	Stearyl alcohol	5gm	5gm	5gm	5gm
2.	White petroleum jelly	5gm	5gm	5gm	5gm
3.	Boric acid	1gm	1gm	1gm	1gm
4.	Propylene glycol	2.4 ml	2.4 ml	2.4 ml	2.4 ml
5.	Sodium lauryl sulphate	0.2 gm	0.2 gm	0.2 gm	0.2 gm
6.	Purified water	5 ml	5 ml	5 ml	5 ml
7.	Glycerine	1 ml	1 ml	1 ml	1 ml
8.	Rosewater	5 ml	5 ml	5 ml	5 ml
9.	Turmeric extract	1 gm	0.75 gm	0.5 gm	0.25gm
10.	Aloe vera extract	1.75 gm	1.5 gm	1.25 gm	1 gm
11.	Lemon juice extract	1 gm	0.75 gm	0.5 gm	0.25 gm

## EVALUATION OF CREAM

- i. Appearance :-** The appearance of the cream was judged by its colour, odour and graded.
- ii. Removal:-** The case removal cream applied was examined by washing the applied part with tap water.
- iii. Homogeneity :-** The formulations were tested for the homogeneity by visual appearance and by touch.
- iv. pH of the cream:-** The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.
- v. After feel :-** Emolliency, Slipperiness and amount of residue left after the application of fixed amount of cream was checked.
- vi. Type of smear:-** After application of cream, the type of film or smear formed on the skin were checked.
- vii. Irritancy test :-** Mark an area on the left-hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, oedema, was checked if any for regular intervals up to 24 hrs and reported.
- Viii. Accelerated stability testing :-** Accelerated stability testing of prepared formulation was conducted at room temperature and studied for 20 days. The formulation were kept both at room and elevated temperature and observed on 0<sup>th</sup>, 5<sup>th</sup>, 10<sup>th</sup> and 20<sup>th</sup> day for the all-Evaluation parameters.

### 3. RESULT AND DISCUSSION:-

The prepared poly-herbal face cream was O/W type emulsion, hence can be easily washed with plain water that gives better customer compliance. There is a growing demand for herbal cosmetics in the world market and they are invaluable gifts of nature. Therefore, we tried to make a polyherbal face cream containing the extract of Aloe vera, Turmeric and Lemon juice. Our study indicated that the formulation found to be more stable, while remaining formulations were not stable and resulted in breakdown of the emulsion when stored for long time.

Evaluation results of all the four formulations are given below.

- i. Physical evaluation:** In this test color, odor, texture and state of the three formulations were checked.

**Table 2: Color, odor, texture and state of the Four formulations was checked**

S. No.	Parameter	Formulation-1	Formulation-2	Formulation-3	Formulation-4
1	<b>Odor</b>	Pleasant	Pleasant	Pleasant	Pleasant
2	<b>Color</b>	Green	Green	Green	Green
3	<b>State</b>	Semisolid	Semisolid	Semisolid	Semisolid
4	<b>Texture</b>	Smooth	Smooth	Smooth	Smooth

#### ii. Washability

Washability test was carried out by applying a small amount of cream on the hand and then washing it with tap water. All three formulations were easily washable.

**Table 3: Result of washability of All Four Formulation**

S.No.	Formulation	Washability
1	F-1	Smoothly Washability
2	F-2	Smoothly Washability
3	F-3	Smoothly Washability
4	F-4	Smoothly Washability

**iii. Viscosity**

Viscosity of cream was done by using Brooke field viscometer at a temperature of 25 °C using spindle No. 63 at 2.5 RPM. According to the results all the Four formulations showed adequate viscosity.

**Table 4: Viscosity observation table**

S.N.	Formulation	Viscosity(cps)
1	F-1	20137
2	F-2	18932
3	F-3	15528
4	F-4	16781

**iv. Phase separation**

Prepared cream was kept in a closed container at a temperature of 25- 100 °C away from light. Then phase separation was checked for 24 h for 30d. Any change in the phase separation was observed/checked. According to the results no phase separation was observed in all the four formulations.

**Table 5: Phase separation observation table**

S.N.	Formulation	Phase Separation
1	F-1	No
2	F-2	No
3	F-3	No
4	F-4	No

**v. Spreadability**

The spreadability of the three formulations that is F-1, F-2, F-3 and F-4 was carried out and out of that for F-3 the time taken by the 2 slides to separate is less so as said in the description of evaluation test lesser the time taken for separation of the two slides better the spreadability so according to this statement F-3 showed better spreadability.

**Table 6: Spreadability observation table**

S. No.	Formulation	Time(sec)	Speadability(g x cm/ Sec)
1	F-1	12	18.6
2	F-2	10	23.2
3	F-3	9	16.7
4	F-4	13	19.8

**vi. Greasiness**

Here the cream was applied on the skin surface in the form of smear and checked if the smear was oily or grease-like. According to the results, we can say that all Four formulations were non-greasy.

**Table 7: Greasiness observation table**

S. No.	Formulation	Greasiness
1	F-1	No
2	F-2	No
3	F-3	No
4	F-4	No

**vii. pH**

According to the results, the  $\text{pH}$  of all the three formulations that is F-1, F-2, F-3 and F-4 were found to be nearer to skin pH so it can be safely used on the skin.

**Table 8: pH observation table**

S. No.	Formulation	pH
1	F-1	6.7
2	F-2	6.8
3	F-3	6.9
4	F-4	6.8

**viii. Irritancy**

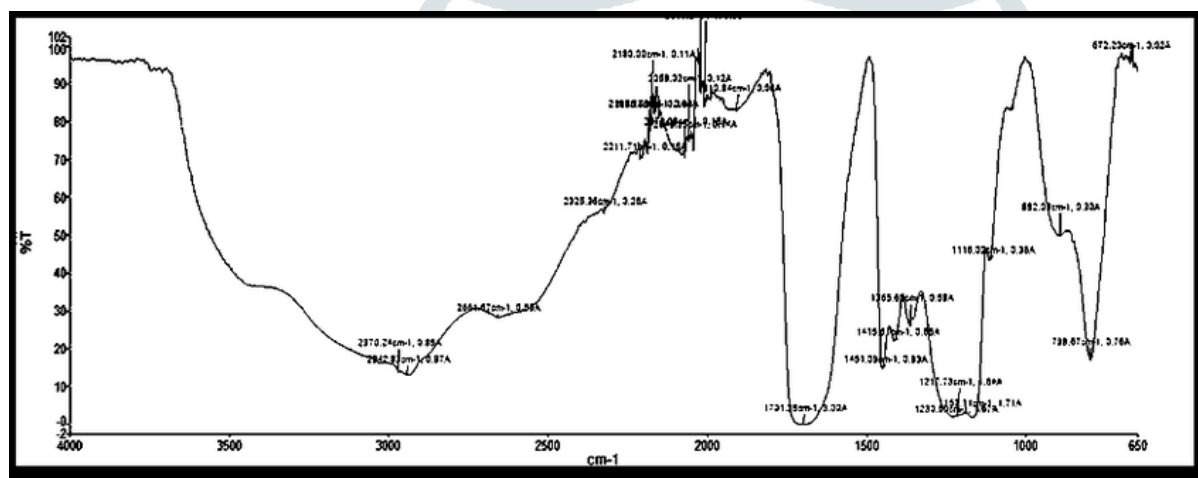
Mark the area (1 cm<sup>2</sup>) on left hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24 h and reported. According to the results all the three formulations that is F-1, F-2, F-3 and F-4 showed no sign of irritancy, erythema and edema.

Table 9: Irritancy study observations

S. No.	Formulation	Irritant Effect	Erythema	Edema
1	F-1	NIL	NIL	NIL
2	F-2	NIL	NIL	NIL
3	F-3	NIL	NIL	NIL
4	F-4	NIL	NIL	NIL

### ix. Compatibility study

Herbal ingredients that is Aloe vera, Turmeric and Lemon juice are compatible with each other and active ingredients in them showed proper peaks in the IR graphs and all the three herbal ingredients showed matching peaks in IR graphs.



### SUMMARY AND CONCLUSION:-

From above discussion it is inferred that the readied plan demonstrated great spreadability, no proof of stage detachment and great consistency during the examination time frame. From the above investigation it tends to be inferred that it is conceivable to create creams with herbal concentrates. The consequences of various trial of cream demonstrates that they are more secure with less result than the engineered ones .In this way, an herbal cream which is non- poisonous , protected, viable and improves tolerant consistence by the usage of natural concentrates would be profoundly adequate. Further examination will do to check experimentally the synergistic activity of definition.

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