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FORMULATION AND EVALUATION OF SYNTHETIC ANTI-ACNE FACEWASH

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ABSTRACT

Acne is one of the most prevalent skin conditions affecting teenagers. It is a disease of the pilosebaceous unit. Blockage of sebaceous glands and colonization with *Propionibacterium acnes* leads to acne. Grading the severity of acne helps to determine the appropriate treatment. Treatment of acne should be started as soon as possible to reduce the risk of serious adverse effects.[1]

The aim of the study was to formulate and evaluate semi synthetic anti acne face wash containing extracts of *Glycyrrhiza glabra* (liquorice), *Rubia cordifolia* (manjistha). The herbs have been reported in the literature having good anti-oxidant, anti-microbial and anti-inflammatory activity. Prepared formulation was evaluated for various parameters like physical parameters, consistency, homogeneity, greasiness, PH, viscosity, spreadability, washability, skin irritability, stability studies etc...[2]

KEY WORDS:-Semi synthetic anti-acne face washes, liquorice, manjistha, maceration

INTRODUCTION

COSMETICS

Cosmetic product means any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, lips, and external genital organs) or with the teeth and mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition, or correcting body odors.[3]

ACNE



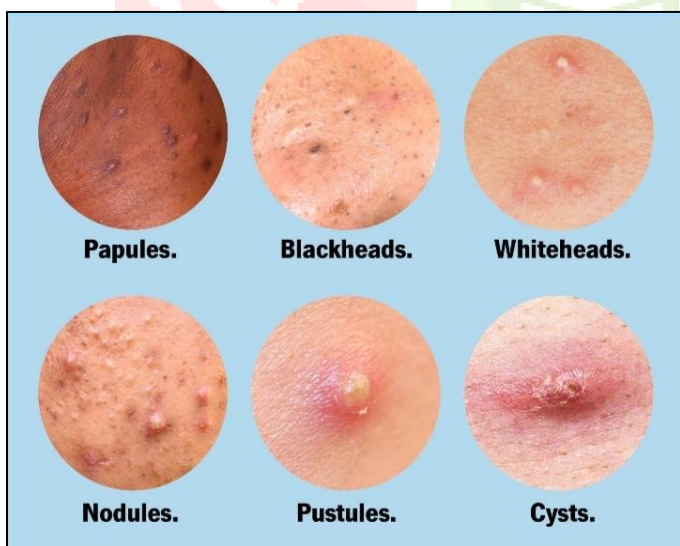
Acne vulgaris is an extremely common disorder of skin that affects on all individuals at least once in their life. The incidence of acne peaks in teenage, but men and women of age between 20-30 are also affected by the disorder.

Acne may be classified as comedonal, popular, pustular, cystic and nodular. Comedonal acne is non-inflammatory & divided in to two: whiteheads and blackheads.[4]

The word acne is derived from the Greek word acne which means prime of life. Generally, acne is considered to be benign, self-limiting condition, that causes severe psychological problems or disfiguring scars that prolong over a lifetime. It is polymorphic disorder and can manifest at any time during life but it is most commonly presents between the ages of 12-24, which is an estimated 85% of the population. [5]

TYPES OF ACNE

Acne vulgaris is a common skin condition characterized by formation of seborrhea, comedones, nodules, papules, pustules and cysts. It occurs in the area of the skin with high hair growth such as legs, face, back and upper chest. Blackheads and whiteheads are most common type of acne[6]



CAUSES OF ACNE

- € Due to hormonal changes during puberty and pregnancy
- € Medications such as corticosteroids and birth control pills
- € Diet containing high amount of refined sugars or carbohydrates
- € Changes in hormone levels during menstruation in females
- € Hereditary

PLANT PROFILE

Glycyrrhiza glabra (licorice)



Kingdom	<i>Plantae</i>
Division	<i>Magnoliophyta</i>
Class	<i>Magnoliopsida</i>
Order	<i>Fabales</i>
Family	<i>Fabaceae</i>
Genus	<i>Glycyrrhiza</i>
Species	<i>G.glabra</i>

Rubia cordifolia (Manjistha)



Kingdom	Plantae
Division	Dicotyledon
Class	Mangoliopsida
Order	Gentianales
Family	Rubiaceae
Genus]	Rubia
Species	R. cordifolia

METHODOLOGY

FORMULATION PREPARATION

Using a grinder machine, Licorice and Manjistha were broken down into fine powder. A precise amount of the powder is added into a conical flask containing distilled water and moderately shaken for three days. The employed method of extraction is maceration. It entails submerging an active substance in liquid inside an airtight container for a specific amount of time, depending on the contents and liquid utilized.

Formulation table

Sl.no	Ingredients	Fnh1 Batch	Fnh2 Batch	Fnh3 Batch	Function
1.	Licorice	4 ml	3 ml	2 ml	Anti-inflammatory agent
2.	Manjistha	2 ml	3 ml	4 ml	Anti-bacterial agent
3.	Lavender oil	0.5 ml	0.5 ml	0.5 ml	Anti-microbial agent
4.	Honey	5 ml	5 ml	5 ml	Anti-oxidative agent
5.	Gaur gum	1 ml	1 ml	1 ml	Thickening agent
6.	Methyl paraben	0.05	0.05	0.05	Preservative
7.	Propyl paraben	0.03	0.03	0.03	Preservative
8.	Sodium lauryl sulphate	1.50	1.50	1.50	Foaming agent
9.	Rose water	q.s.	q.s.	q.s.	Vehicle

Filtration

After 3 days the aqueous extract is filtered using a regular filter paper and filtrate was collected

Evaporation

To acquire a certain concentration the collected extract is maintained on a water bath at 60-70 C for 2 to 3 hours. The resulting concentration was collected and chilled prior to the addition of other ingredients.

Preparation of final product

For the completion of formulation several batches are made with different concentrations of Licorice and Manjistha as listed in the table. Then desired amount of Gaur gum (dissolved in glycerin), honey, Lavender oil, methyl paraben, propyl paraben and sodium lauryl sulphate are added with gentle stirring. Then the obtained mixture is added to a suitable container.

Evaluation of formulation

The following parameters are employed for the evaluation of the formulation

1. Physical parameters:

Physical properties such as color, odor and appearance of the formulation were studied

2. pH:

The Ph is measured using a ph scale in order to determine wheather the product is acidic or basic for ensuring its safety over usage

3. Consistency:

The state of the product when it is applied over the skin is studied.

4. Viscosity:

Viscosity of the formulation is determined by using Brookfield viscometer and the value was recorded.

5. Greasiness:

The greasiness is assessed by directly applying on the skin

6. Homogeneity:

The homogeneity is tested by visual inspection. The formulation is allowed to set on a container and evaluated the formation of agglomerates.

7. Washability:

Prepared formulations were applied over the skin, then the ease of washing it with water were studied.

8. Spreadability:

METHOD 1

Spreadability denotes the extent of the area to which the formulation readily spreads on the application to the skin. The bioavailability efficiency of the formulation depends on the spreadability value. Spreadability is defined in terms of time in seconds required taken by the upper slide to slip off the product place between the two slides under a certain load. The lesser time is taken for the separation of two slides, the better the spreadability.

Two sets of glass slides of standard dimension were taken. The formulation was placed on the top of one slide so that the formulation gets sandwiched between the two slides. 100 g weighing formulation was placed on the top of the upper slide so that the gel between the two slides was pressed uniformly to form a thin layer.

The weight was removed and the excess formulation adhering to the slides were scrapped off.

METHOD 2

Few drops of formulation were placed on the lower slide, also tie a weight of 10g on the upper slide. Place the upper slide on the lower slide. Then the time taken by the upper slide to slip off the lower slide was noted.

Spreadability was calculated by the following formula.

$$S = M * L / T$$

Where S = Spreadability

M = Weight tied to the upper slide

L = Length of the glass

T = Time in seconds

9. Skin irritability test:

The test is performed on a few group of healthy individuals of both sex after obtaining approval for the same. Few drops of formulation were applied to the part of the skin and stand for few minutes and observe the occurrence of any irritation.

10. Extrudability:

The ability of a material to be extruded from the nozzle is known as extrude ability

RESULTS AND DISCUSSION**1. Physical parameters**

Sl. No	Parameter	Fnh1	Fnh2	Fnh3
1.	Color	Reddish brown	Reddish brown	Reddish brown
2.	Odor	Pleasant	Pleasant	Pleasant
3.	Consistency	Semi solid	Semi solid	Semi solid
4.	Greasiness	No	No	No

2. Ph

Sl. No	Formulation	pH
1.	Market	5.5
2.	Fnh1	5.2
3.	Fnh2	5.3
4.	Fnh3	5.8

3. Consistency

Sl. no	Formulation	Consistency
1.	Market	Semi solid
2.	Fnh1	Semi solid
3.	Fnh2	Semi solid
4.	Fnh3	Semi solid

4. Viscosity

Sl.no	Formulation	Viscosity
1.	Market	47.7
2.	Fnh1	12.9
3.	Fnh2	20.5
4.	Fnh3	48

5. Greasiness:

Sl.no	Formulation	Greasiness
1.	Market	No
2.	Fnh1	No
3.	Fnh2	No
4.	Fnh3	No

6. Homogeneity

Sl.no	Formulation	Homogeneity
1.	Market	Homogenous
2.	Fnh1	Homogenous
3.	Fnh2	Homogenous
4.	Fnh3	Homogenous

7. Washability

Sl. no	Formulation	Washability
1.	Market	Good
2.	Fnh1	Good
3.	Fnh2	Good
4.	Fnh3	Good

8. Spreadability

Sl.no	Formulation	Spreadability
1.	Market	10.24
2.	Fnh1	9.2
3.	Fnh2	9.6
4.	Fnh3	9.08

9. Skin irritability

A small amount of formulations were applied on the skin, and stand for few minutes. If there is no redness, itching etc. The formulation is risk free to use on the skin.

10. Extrudability

Sl.no	Formulation	Extrudability
1.	Market	Good
2.	Fnh1	Good
3.	Fnh2	Good
4.	Fnh3	Good

Conclusion

This article come in to a conclusion that people need an effective skin care routine with minimum allergic and other toxic effects. Hence people will prefer natural or semi-synthetic skin care products over synthetic ones. This study was performed with an intention of preparing cosmetic products using natural ingredients which promises to provide safer and effective solutions for various skin problems.

The main ingredients of this face wash, Licorice and Manjistha has already proven it's magical anti-acne properties owing to its good anti-microbial, anti-inflammatory and anti-oxidant effects which will promote clean and beautiful skin. Thus this study revealed that the developed face wash have minimum side effects and safe for the skin.

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