



FORMULATION AND EVALUATION OF HERBAL ANTI-ACNE GEL FROM HIBISCUS ROSA-SINENSIS

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ABSTRACT :

Nowadays the world has realized the herbal formulation are safer and more effective than synthetic one it enhances the demand of herbal formulation worldwide. The herbal cosmetics are better than synthetic as they have least side effect. The present work deals with the “development and evaluation of herbal gel” containing Hibiscus Rosa s extract and Aloe vera. The plant has been reported in a literature having good anti-microbial, anti-acne, anti-oxidant, anti-inflammatory activity. Acne is a common disorder. It mainly causes due to extra secretion of sebum and oil gland. Face, neck and back are more susceptible to acne. Hibiscus contain acids that act as chemical exfoliator and help to clear skin pore. It also contains anti-oxidant which help to nourish and hydrate skin. The plant also has anti-microbial activity that help to fight with acne causing bacteria on skin.

Keywords: - Hibiscus Rosa-sinesis, herbal gel, acne, phytochemicals.

INTRODUCTION: -

Hibiscus rosa- sinesis commonly called rosella, belongs to the family of Malacia. It is considered a multi-purpose plant that have various health benefits. The shrub originated in Africa and is planted worldwide in tropical and sub-tropical region of India, China, Sudan, Malaysia and Taiwan. Hibiscus is cultivated from its stem for flower, leaves, stem and root. Hibiscus flower and leaf are widely used in food, cosmetics and pharmaceutical formulation. Hibiscus also known as rose of China worldwide, Jaswand in Marathi and Gul mohar in Hindi. Now day cultivated as an ornamental plant worldwide. It is a bushy, evergreen perennial shrub growing as tall as 2.5-5 m and 1.5-3 m wide, with solitary, dark-red flowers and glossy leaves. The flower is 5 petaled and are up to 10 cm in diameter, with orange tipped red anthers. The hibiscus flowers are showy and conspicuous. It is usually born singly but sometimes can be seen in clusters. The flowers are trumpet shaped and range in color red to dark red. Hibiscus leaves, roots and flowers are anodyne and stimulate blood circulation and regulate menstruation. Traditionally flower extract is used for blood pressure, liver disorder. Young flower and leaves are used for headache also. It has been reported that hibiscus flower is having anti-inflammatory, analgesic property. Hibiscus tea is nowadays widely used which is rich in vitamin c. Hibiscus also possess anti-microbial, anti-fungal, anti-inflammatory property has been proved by several studies.

Hibiscus contains the various phytochemicals like alkaloid, flavonoids, tannins, terpenoids, cyclopeptide alkaloid and vitamins (c). the various chemical like campestris, stigmasterol, oxalic acid, citric acid and tartaric acid are present in small amount in flower of Hibiscus rosa S.

Botanical classification of Hibiscus rosa-S

Kingdom	Plantae
Division	Magnoliopsida
Class	Magnoliopsida
Subclass	Dilleniidae
Order	Malvales
Family	Malvaceae
Genus	Hibiscus
Species	Hibiscus Rosa-sinensis

ACNE: -

“acne” word derived from Greek word “Akme” which means peak or apex. Acne is a skin condition that occurs when your hair follicles become plugged with oil and dead skin cells. It causes whiteheads, blackheads or pimples. Acne is most common among teenagers, though it affects people of all ages. "The mixture of oil and cells allows bacteria that normally live on the skin to grow in the plugged follicles and cause inflammation-swelling, redness, heat, and pain. When the wall of the plugged follicle breaks down, it spills the bacteria, skin cells, and sebum into nearby skin, creating lesions or pimples."

PRINCIPLE OF ANTI ACNE ACTION OF HIBISCUS ROSA-SINENSIS: -

It inhibits acne by following mechanism Hibiscus contain acid alpha- hydroxy acid that act as chemical exfoliator and help to clear skin pore. It also contains anti-oxidant which help to nourish and hydrate skin.

The plant also has anti-microbial activity that help to fight with acne causing bacteria on skin.

The natural acids present in Hibiscus help to purify your skin by breaking down dead skin and increasing cell turnover, they can even help to control acne breakouts.

MATERIAL AND METHOD-**Material: -**

Hibiscus flower petals, aloe vera were collected from herbal garden of R. P. COLLEGE OF PHARMACY, DHARASHIV. The preservative methyl paraben, propyl paraben and solvent propylene glycol were collected from store room of college (table No.1)

Plant extract: -

Methanolic extraction of Hibiscus Rosa-sinensis: -

50 gm of Hibiscus Rosa-sinensis petals were soaked overnight in 100 ml methanol. After 24 hour the solution were substituted for mixing using magnetic stirrer at 50 rpm for 15 min. solution is filtered by using sieve. Filtrate was substituted for evaporation by using double boiler method with use of water bath. filter is continuously stirred with hand stirrer until its quantity become half of initial quantity.

Aqueous extraction of Hibiscus Rosa-sinensis: -

50 gm of hibiscus rosa sinensis petals were soaked in 100 ml water for 24 hours. After 24 hour the mixture were substituted for mixing using magnetic stirrer at 50 rpm for 25 min. Solution were filtered by using sieve. filtrate was substituted for evaporation through double boiler method with use of water bath. Filter is continuously stirred until its quantity become half of its initial quantity.

Preparation of Gel –

Phase I: -

Weight Metha paraben and propyl paraben 0.2 gm and 0.1gm respectively, dissolve in 5 ml water with continuous stirring on water bath until it become complete soluble.

After heating cool the solution and add 4.5 ml propylene glycol.

Phase II: -

Wight 15 gm acacia and soke it I 20 ml water for 2- 4 hour. after complete saturation of acacia find out swelling capacity of acacia. Add 10 gm acacia in 10 ml water and kept it for swelling for 2-4 hour.

Phase III: -

Mix the both solution (phase I & phase II) in a beaker with continues stirring. Add 5 ml methanolic extract in above solution followed by continuous stirring.

The same method followed for the preparation of aqueous extract gel by adding 5 ml aqueous extract of Hibiscus flower.



Fig no-1

Fig no-2

FORMULA

Sr no.	INGREDIENT	PROPERTY	FI	FII
1	Propyl paraben	Preservative	0.1 gm	0.1 gm
2	Methyl paraben	Preservative	0.2 gm	0.2 gm
3	Rose water		2-3 drops	2-3 drops
4	Propylene glycol	Solvent	4.5 ml	4.5 ml
5	Hibiscus extract	Anti-acene	5 ml	5 ml
6	Aloe vera gel	Moisturizer	5 ml	5 ml
7	Acacia	Binder	10 gm	10 gm
8	Distilled water	solvent	qs 20 ml	qs 20 ml

FI - methanolic extract of hibiscus

FII- aqueous extract of hibiscus

EVALUATION OF FORMULATION
Evaluation-

Physical parameters such as color, Odor, appearance, homogeneity and consistency were checked manually.

2 Homogeneity-

All developed gels were tested for homogeneity by visual inspection after they have Physical been set in the container. They were tested for their appearance and presence of any aggregates, particles and fibers.

3. Determination of pH-

pH was checked using pH paper observation and readings were noted.

4. Viscosity-

Viscosity determinations of the prepared formulations were carried out by Brookfield Synchro electric viscometer.

5. Irritancy Test-

The gel was applied on left hand dorsal side surface of 1sq.cm and observed in equal intervals up to 24hrs for irritancy, redness and oedema.



Fig no- 3



Fig no- 4

6. Washability-

The product was applied on hand was observed under running water.

Also determined washability by using glass slide the gel was applied on glass was observed under running water and time noted when gel removed from slide.

7. Spreadability: -

Two sets of a glass slide with standard dimension were taken. Polyherbal formulation gel was placed in between the two slides and sandwiched about the length of 60mm. Removed the adhered excess gel on the surface of the glass slides and fixed to a stand without any disturbance. In the upper slide, 20 g weight was tied and noted the time taken for movement of the upper slide to the distance of 60mm under the influence of weight.18 Meantime was calculated by repeating the experiment three times and the Spreadability was calculated using the following equation 1.

Spreadability = (Weight × Length) / Time (Equation 1)

8. Drug content:

Drug content was estimated spectrometrically where 1g of the formulation was taken and dissolved in 100ml of phosphate buffer pH 7.4 and kept for shaking for 1-2 hrs. The solution was passed through the Whatman filter paper no.42 and filtered. Appropriate dilutions were done if required and the drug content was measured spectrophotometrically against phosphate buffer pH 7.4 at 278nm.

9. Evaluation of anti-inflammatory activity of Hibiscus: -

Cup plate technique or cylinder plate technique: -The nutrient agar is melted, cooled suitably and poured into Petri dish Spread 0.2ml of know concentration of E. Coli, on the surface of solidified agar. Cups or cavities are made by using a sterile borer. Now 0.5, 1, 1.5, 2, 2.5 ml of Hibiscus flower extract poured into the cups of Agar plate and then incubated at 37°C for 24 hours. Calculate the zone of inhibition.



Fig no- 5

RESULT AND DISCUSSION-

Acne vulgaris is a chronic inflammatory disorder of the skin which affects approximately 80% adolescent during puberty stage. Gram-positive bacterium such as Staphylococcus, Propionibacterium and Escherichia species are linked to this skin condition. The increasing frequency of intake of antibiotics to overcome this problem explores several side effects. Therefore, it needs to focus on the herbal formulation as a topical first-line treatment. Hibiscus rosa sinensis, which belongs to Malvaceae family, has been widely used as a traditional remedial plant in China and several tropical countries. Flavonoids, tannins, terpenoids, saponins, and alkaloids are the main phytochemicals as they are present in different extracts, and are more likely responsible for their biological activities. Lower toxicity of this plant can be an advantage to qualify it to be used as new therapeutic agent. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbs are safe, efficacious and multifunctional. Medicinal plant extracts are known to have enormous therapeutic potential. Zone of inhibition, activity index and percent inhibition of formulation F1 was higher than other formulation.

CONCLUSION

Recently herbal medicines are more considered as safe with fewer side effects than synthetic drug for the treatment of acne vulgaris. Therefore, In the global market. Natural remedies including herbal formulation are in great demand. It is a very good attempt to formulate and evaluate the polyherbal anti-acne gel. Herbal formulation is easily acceptable by our body. They are safe with fewer side effects than synthetic ones. F1 and F2 formulation are prepared by using different extract (methanolic and aqueous) prepared formulation (F1 and F2) where evaluated for various parameters like color, appearance, consistency, wash ability, pH and Spreadability, skin irritation. After evaluation study shows that both formulation gives good affect neither show any side effect or skin irritation.

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