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FORMULATION AND INVITRO EVALUATION OF HERBAL SKIN WHITENING CREAM OF *SWEET LIQUORICE* EXTRACT AND *SOLANUM LYCOPERSICUM* JUICE

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ABSTRACT

Now a days there's adding demand for the herbal cosmetics in our country. Present study describes the expression of cream by using *sweet liquorice* extract excerpt and *Olanum Lycopersicum* Juice. The purpose of study is to develop and formulate herbal skin decolorizing cream with minimum side effect and combine *Liquorice* Extract excerpt was prepared by Soxhlet extractor and it's estimated by colorful phytochemical and pharmacognostic studies. Excerpt was linked by dye test, spredablity, homogeneity. The *Solanum Lycopersicum* Juice. Was stabilized by using bomb juice, methyl paraben and propyl paraben. By changing the attention of olive oil painting and *Solanum Lycopersicum* Juice.6 different types of creams are formulated. The attention of excerpt used in cream was. In- vitro evaluation of all batches was carried out and other evaluations like colour, appearance, snap thaw test, sun exposure test, medicine content, density, centrifugation testing was carried out. From the below evaluations it's concluded that F4 batch was the optimized batch. F4 batch was set up stable for 3 months at room temperature by visual observation.

INDEX TERMS - *Glycyrrhiza glabra* extract, *Solanum lycopersicum* juice, cream, drug content, skin whitening.

INTRODUCTION

Women have been wearing clothing to enhance their personal beauty since ancient times. Even now, many choose natural cures (plant extracts) over conventional cosmetics, particularly in rural regions. A certain percentage of women continue to enhance their skin's appearance with herbal cosmetics. Cream is a term used to describe semisolid emulsions that are meant to be applied externally. They can be water-in-oil (w/o) or oil-in-water (o/w). Cream is divided into two phases: water-in-oil and oil-in-water. Natural treatments are more widely accepted since they are less risky and need less Human beauty is enhanced by the use of cosmetics. A lot of cosmetic products contain herbs. An o/w or w/o emulsion with an oily and aqueous phase is called cream. A natural skin cosmetic should moisturize, hydrate, and nourish the skin. When two or more herbs are used in formulations, they are known as polyherbal formulations. The present work is an attempt to develop a cream that can produce a multipurpose effect. Cosmetic preparations are used to treat various skin disorders like skin pigmentation and skin aging. Herbal formulations have grown in demand in the global market. However, there is now increased scientific evidence that plants possess a vast and complex arsenal of active ingredients (phytochemicals) that have the ability to calm or smooth the skin but also to actively restore, heal, and protect the skin. Curcuma longa has great promise in cosmetics for antiaging, cooling, mending, and relaxing inflamed skin, whether from sunburn or cutaneous eruptions. It plays a significant part in skin whitening. Skin-lightening creams are used by a lot of people to address different kinds of skin conditions. *Liquorice*, *Glycyrrhiza glabra*, is a member of the Leguminosae family. The primary ingredient in glycyrrhiza glabra extract that causes skin to whiten is glycyrrhizin acid. DNA synthesis is unaffected by glycyrrhizin acid. Glycyrrhizin acid lowers the amount of melanin in the skin as well as the synthesis of the tyrosinase enzyme. This results in the whitening of the skin.

VARIOUS HERBS THAT ARE USED IN HERBAL SKIN LIGHTENING CREAM:

1] *Glycyrrhiza root*

Fig. 1: *Glycyrrhiza glabra root.*

Synonyms

Radix Glycyrrhizate, Sweet liquorice.

Origin Biological

Liquorice is made up of subterranean stems, roots, and peeled and unpeeled stolon's of Glycyrrhiza glabra Linn and other species of Glycyrrhiza that are members of the Leguminosae family.

Chemical Constituents

The chief constituent of liquorice root is Glycyrrhizin (6–8%), obtainable in the form of a sweet, which is 50 times sweeter than sucrose, white crystalline powder, con-sisting of the calcium and potassium salts of glycynhizic acid. Glycyrrhizic acid on hydrolysis yields glycyrrhetic or glycyrrhetinic acid. Glycyrrhizinic acid is a triterpenoid saponin having α-amyrine structure.

Applications

Many people use glycyrrhiza as a sweetener and to treat bronchial issues like bronchitis, catarrah, the flu, and coughs. It has an expectorant effect while also lessening throat discomfort. It has its expectorant and demulcent properties. It is applied to reduce tension. It is an effective treatment for tuberculosis, with effects akin to those of hydrocortisone.

2) *SOLANUM LYCOPERSICUM*

Fig. 2: *Solanum Lycopersicum.*

Synonyms: Tomato plant. tomato vine. Tree tomat.pomme d'amour (French), tomate, (Spanish), jitomate (Spanish), Lycopersicon (Latin)

Biological source

Solanum lycopersicum is derived from two wild ancestor species, Solanum pimpinellifolium and Solanum cerasiforme. Other wild species are useful for breeding disease resistance, colour improvement and desirable quality traits.

Chemical Constituent

Contain other active compounds, namely, neoxanthin, lutein, α-cryptoxanthin, α-carotene, β-carotene, cyclolycopene, and β-carotene 5, 6-epoxide.

Aplication

May help protect against skin cancer, may reduce risk of sunburns, may promote wound healing, may soothe skin inflammation, may stimulate collagen production, may help remove dead skin cells, may have anti-aging properties, may help fight cellular damage.

3] *ROSEMARY OIL*

Fig 3. *ROSEMARY OIL.*

Synonyms: Salvia rosmarinus Schleid. and Rosmarinus angustifolius Mill.

Biological Source: Oil of Rosemary is distilled from the flowering tops of leafy twigs of Rosmarinus officinalis, belonging to family Lamiaceae.

Chemical Constituents: The fresh material yields about 1–2% of volatile oil containing 0.8–6% of esters, and 8–20% of alcohols. The principal constituents are 1,8-cineole, borneol, camphor, bornyl acetate, and monoterpene hydrocarbons. Rosemary leaves also contain the triterpene alcohols α- and β-amyrins, rosmarinic acid, rofficerone caffeic acid, chlorogenic acid, α-hydroxydihydrocaffeic acid, glycosides of luteolin and diosmetin, carnosolic acid, carnosol, rosmanol, epirosmanol, and isorosmanol.

Uses

The oil is mainly used in the perfumery industry. It is a component of soap liniment and is frequently used in aromatherapy. The oil is also used for gastrointestinal disturbances, to enhance urinary and digestive elimination function and as a choleretic or cholagogue.

Materials

Extract (liquorice), M.P. (gm) Methylparaben, Stearic acid (gm), Cetyl alcohol (gm), S.L.S(gm), Olive oil(ml), Jojoba oil(ml), Olanum lycopersicum juice, Lemon juice (ml), Distilled water (ml)

Methods

a) Preparation of extraction

50gm. Of dried powdered of liquorice root were moistened with150ml of 10% Ammonia & then percolated three times with 80% ethanol (3×300ml) each for 24hrs. at room temp. The ethanolic extract was conc. till dryness**.** The extract was subjected to several chemical and physical screening tests. Using standard procedures, a preliminary phytochemical screening of the Solanum Lycopersicon extract was conducted. Stabilization of potato juice was done by adding different preservatives.

Extraction of Sweet liquorice extract (*Glycyrrhiza glabra*)

Table no. 1: The formulation of herbal Skin whitening creams.

Sr. No	Ingredients
1	Extract (liquorice)
2	M.P. (gm) Methylparaben
3	Stearic acid (gm)
4	Cetyl alcohol (gm)
5	S.L.S(gm)
6	Olive oil(ml)
7	Jojoba oil(ml)
8	Olanum lycopersicum juice
9	Lemon juice (ml)
10	Distilled water (ml)
11	Rosemary Oil

Formulation of Skin Whitening Cream

Phase I]

Take clean and dry porcelain dish and required quantities of Steric acid, Cetyl Alcohol, Olive Oil, sodium lauryl sulphate and transfer in it and heat about 70^{o}c. then Add Jojoba oil slowly add the heated water while stirring continuously to emulsify.

Phase II]

Take another clean and dry porcelain dish and required quantities of Then add the slowly Extract, distilled water, preservative, Lemin juice and heat the mixture at 70^{o}c. mix Phase II into Phase I slowly with continuous stirring. cools to room temperature. Once cooled, transfer the cream to a sterilized container.

Table no. 2: Formulation Ingredients of herbal Skin whitening creams.

Sr. No	Ingredients	B1	B2	B3	B4	B5
1	Extract (liquorice) (gm)	1	1	1	1	1
2	M.P. (gm) Methylparaben (gm)	0.5	0.5	0.5	1	0.5
3	Stearic acid (ml)	10	10	10	10	10
4	Cetyl alcohol (ml)	5	5	5	5	5
5	S.L.S(gm)	10	10	10	10	10
6	Olive oil(ml)	8	8	8	8	8
7	Jojoba oil(ml)	5	5	5	5	5
8	Olanum lycopersicum juice	5	4	3	2	1
9	Lemon juice (ml)	1	1	1	1	1
10	Rosemary Oil (ml)	1	1	1	1	1
11	Distilled water (ml)	Q. S	Q. S	Q. S	Q. S	Q. S

EVALUATION TEST OF SKIN WHITENING CREAM

1. Physical evaluation

The cream's color, texture, and level of smell were used to evaluate its appearance.

2. Ph Examination

Standard buffer solution was used for pH meter calibration.

The cream was weighed out to be about 0.5 g, dissolved in 50.0 ml of pure water, and the pH was recorded.

3. Skin Irritation Test

The dorsal surface of the left hand was marked with a 1 sq. cm area of cream, and the time was recorded.

After a full day of observation, the erythema, edema, and irritation were recorded.

4. Phase separation

Then phase separation was checked for 24 h for 30 d. Any change in the phase separation was observed/checked.

5. Washability

Washability test was carried out by applying a small amount of cream on the hand and then washing it with tap water.

6. 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.

7. Viscosity

Viscosity of cream was done by using Brooke field viscometer.

RESULTS AND DISCUSSION

1. Physical evaluation

In this test Color, Odor, texture and state of the formulation were checked.

Table 3: Formulation of Physical evaluation.

S.no.	Parameters	Formulation
1	Color	Yellow
2	Odor	Pleasant

3	texture	Smooth
4	state	Semisolid

2. pH

According to the results, the pH of herbal cream was found to be nearer to skin pH so it can be safely used on the skin

Table 4: Formulation of pH.

Formulation	PH
F1	5.7
F2	5.8
F3	5.6
F4	7.0
F5	6.5

Mark the area (1 cm2) 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 of herbal cream showed no sign of irritancy, erythema and edema.

Table 5: Irritancy Test of Formulation.

Formulation	Irritant effect	Erythema	Edema
F1	NIL	NIL	NIL
F2	NIL	NIL	NIL
F3	NIL	NIL	NIL
F4	NIL	NIL	NIL
F5	NIL	NIL	NIL

4. Phase separation

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

Table 6: Phase separation Test of Formulation.

Formulation	Phase separation
F1	Separation
F2	NIL
F3	NIL
F4	NIL
F5	Separation

5. Washability

Washability test was carried out by applying a small amount of cream on the hand and then washing it with tap water.

All Five formulations were easily washable.

Table 7: Washability Test of Formulation.

Formulation	Washability
F1	Not easily washable
F2	easily washable
F3	easily washable
F4	easily washable
F5	Not easily washable

6. 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 Five formulations were non-greasy.

Table 8: Greasiness Test of Formulation.

S.no.	Formulation	Greasiness
1	Herbal cream	Non-greasy

7. Viscosity

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

Table 9: Viscosity Test of Formulation.

S.no.	Formulation	Viscosity(cps)
1	Herbal cream	21025

CONCLUSION

Conclusion Sweet liquorice and Olanum lycopersicum are documented within the traditional Indian method of drugs and in Ayurvedic preparations for his or her medicinal benefit. It's been determined to extract and formulate herbal cream within the current work. Within the world market, there's a rising appetite for herbal cosmetics and that they are invaluable gifts from nature. Therefore, we attempted to supply a herbal Skin whitining cream containing Sweet liquorice and Olanum lycopersicum extract in various concentrations. In terms of dermal irritation and allergic sensitization, the stable formulations were safe. Over other

creams, herbal creams offer many advantages. The goal of this study was to formulate a polyherbal cream that doesn't cause side effects or adverse reactions. By adding different concentrations of Stearic acid and cetyl alcohol, Olive oil(ml), Jojoba oil(ml), Olanum lycopersicum juice, Lemon juice various sorts of oil formulations in water (O / W) herbal creams, namely F1 to F5, were formulated. On various parameters like pH, viscosity, and stability, the assessments of all formulations (F1 to F5) were performed. The F4 formulations showed good consistency, appearance, pH, no signs of phase separation, and simple remova and irritancy tests. The formulations secure to use for skin applications. These studies indicate that the extract and base cream composition of F4 is more stable and healthier.

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