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Formulation and Evaluation of Herbal Sunscreen Cream

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ABSTRACT

A chemical substance called sunscreen helps shield you from ultraviolet radiation. UVB radiation causes sunburn, however UVA radiation may be more harmful to the skin. Both wavebands should ideally be blocked by sunscreen. The development of herbal topical sunscreen was the study's goal. preparation that combines some medicinal herbs with some fixed oils. Regular sunscreen use lowers the risk of developing melanoma, squamous cell carcinoma, and actinic keratosis. Both organic and inorganic compounds can be found in sunscreen. Another name for sunscreen is sublock lotion. Products that protect the skin by reflecting or absorbing ultraviolet light from the sun. The usage of sublock products has increased due to the rising prevalence of skin malignancies and the photodamaging effects of UV radiation; these products have been proved to be effective in relieving the symptoms. Sunscreen should be safe, chemically inert, non-toxic, non-irritating, photo-stable, and capable of completely shielding the skin from UV radiation harm.

KEY WORDS: Sunscreen gel, Azadirachta indica, Aloe barbadenisis, Beta vulgaris, UV protective study

INTRODUCTION:

Herbal sunscreen, also referred to as herbal sunblock, is a type of lotion, spray, or other topical product that provides protection for the skin against the sun's UV rays and helps minimize sunburn and other skin damage. Sunscreen can be categorized into two main types.

1) Physical sunscreen:

Those that reflect the sunlight.

2) Chemical sunscreen:

Those that absorb the UV light.

Herbal sunscreen, also referred to as herbal sunblock or herbal suntan lotion, is a lotion, spray, or other topical product that helps shield the skin from ultraviolet (UV) radiation from the sun. It also helps prevent sunburn and other skin damage and uses herbs to help lower the risk of skin cancer. But in the US, the phrase "Untan"

Generally speaking, lotion is the antithesis of sunscreen; it refers to a moisturizer that maximizes UV exposure and tanning instead of blocking it. Whether made for outdoor use or for use with tanning beds, these are generally referred to as indoor tanning lotions or just sun lotion. They may or may not have SPF protection.

Advantage

Renewable resources.

Botanical ingredients are easily available.

No irritation No special equipment needed for preparation.

No side effect

They are inexpensiveEasily available.

PROTECTION

Protecting the skin and eyes from the sun's harmful rays is essential because UV radiation exposure is the primary cause of skin cancer and ages the skin. Due of photosensitivity, some persons might require extra caution.

If you are at a high altitude in any season, you should also take precautions to protect your skin, especially in the snow, as it reflects more UV rays onto your skin.

CHARACTERISTICS:

Be rapid soluble in suitable vehicle

Be neutral

Be non-toxic and non-irritant

Not be rapidly absorbed

Be stable to heat;' light and perspiration

Classification of Sunscreen Cream:

Topical sunscreens are separated into two types according to their method of protection topical and systemic. Topical sunscreens are classed according to the route of delivery.

1. Organic sunscreen

2. Inorganic sunscreen

1.Organic Sunscreen:

The method that oragnic sunscreen functions is by entering into the skin and turning UV light into heat. It is thin and perfect for daily usage, making it simple to add skincare components. Carbonbased chemicals are the active ingredients in organic sunscreens. It has an active component that is not a mineral.

2.Inorganic sunscreen:

These particles provide a physical barrier against infrared and ultraviolet light by scattering and reflecting UV rays back to the surrounding environment. They encompass the whole UV pectrum, which makes them broad spectrum. A different name for inorganic sunscreen is sun block.

• Ideal properties of herbal sunscreen cream:

- should not couse irritation
- should not be easily washed away with water
- should be safe ,effective ,chemicaly inert at law concentration
- most be stable in the presence of sunlight
- should be abal to providecomplete protection of skin
- Must absorb a broad rang of UV rays cousing sunburn
- Benefits of herbal sunscreen:
- Lower skin cancer risk
- Shields from harmful UV rays
- Maintain the brightness of your natural complexion
- Works immediately when applied on the skin
- Delays premature signs of aging
- Reflects UVA and UVB rays
- Avoid inflammation and redness
- Avoid blotchy skin and hyperpigmentation
- Stop DNA damage
- Prevent the early onset of wrinkles and fine lines
- Reduce risk of skin cancer
- Protect against sunburn

Maintain the look and texture of your skin

Sunscreen has been shown to improve the skin's resistance to ultraviolet radiation by preventing and reducing the harmful effects of UV radiation. Two mechanisms are the focus of their nvestigation. A layer that prevents sun rays from passing through the skin is produced by the scattering and reflection of ultraviolet energy from the skin's surface by minerals based on in organic sunscreen. By absorbing UV energy and turning it into thermal energy, organic sunscreen lessens the damage it causes and the depth to which it can infiltrate the skin

• Development of sunscreens:

In order to create sunscreens, one must have a solid understanding of both the physicalchemical characteristics of the ingredients one plans to use in the formulation and the anato my and physiology of the skin.

Examining the stability of the excipients and organic materials is necessary because some become unstable when exposed to UV light.

> Formulation of sunscreen cream was prepared by following procedure :

I have to take Ashwagandha oil flower extract. Then I have take Aloevera gel because it has proven to both treat and prevent burns on skin. Then added rose water in mixture rose water provide cooling effect. Then gradually add coconut oil and vitamin E. All the ingredients were mixed vigorously using spatula for about 20-30 min and placed.

List of ingredients used in formulation :

Sr. No	INGREDIENT	ACTIVITY	QUANTITY (100 ml)
1	Aloe Veraera	Anti-oxidant	33.3 gm
2	Coconut oil	Hydrate the skin and help in retain moisture	13.3 ml
3	Rose water	Skin tonner	26.6 ml
4	Vitamin E capsule	Anti-oxidant	13.3 gm
5	Ashwagandha Oil	Anti-again agent	13.3ml

> Evaluation of sunscreen cream for sunscreening activity

• Effectiveness of sunscreen

Sunscreen protection factor (SPF) is a measure of how effective a sunscreen is. It is the ratio of UV energy needed to create a minimal erthemal dosage in protected skin to unprotected skin. To determine the spf in vitro, a quick, easy, and accurate way is to screen the product's absorbance between 290 an d 320 nm at 5nm intervals.

By using the Mansur equation, which is as follows, SPF may be computed.

EVALUATION OF CREAM

A .PH of the Cream

The pH meter was calibrated using standard buffer solution. About 0.5g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.

B.Viscosity

Viscosity of the formulation was determined by Brookfield Viscometer at 100 rpm, using spindle no 61

SUNSCREEN Viscosity (cps)

	10 rpm	20 rpm	30 rpm	50 rpm	60 rpm	100 rpm
F1	188.0	89.6	55.4	29.0	24.5	16.5

CPS Centipoise ; RPM rotation per minute

C. HOMOGENEITY

The formulations were tested for the homogeneity by visual appearance and by touch.

Appearance:

The appearance of the cream was judged by its color, pearlscence and roughness and graded.

D. REMOVAL:

The ease of removal of the cream applied was examined by washing the applied part with tap water.

E. DRY TEST :

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red the ground colourless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e. the disperse globules appear colourless in the red ground.

F. IRRITANCY TEST:

The cream was applied to the specified area and time was noted. Irritancy, ,was checked if any for regular intervals up to 24hrs and reported.

G. TYPE OF SMEAR:

After application of cream ,the type or film or smear formed on the skin were checked.

OBSERVATION

Sr.no	Parameters	Observation
1.	Colour	Pale yellow
2.	Ouder	Characteristics
3.	Spreadability	Good and uniform
4.	PH	6.5
5.	Test of Erritancy	Number Irritation reaction

RESULT

A sunscreen product should have a broad range of absorption in order to effectively prevent sunburn and other skin damage. Viscosity and spreadability are the main factors influencing the acceptability of cosmetic formulations during handling and storage. Redness, inflammation, and irritation were abse nt from the designed cream. It was discovered that there was no change in the cream's color after a prolonged storage period. The cream was readily elim inated by using tap water for washing.

CONCLUSION

Because people are aware of the importance of protecting themselves from harmful UVA and UVB radiation, it can be said that the market for natural sunscreen components is very promising.

Long-term benefits Sunscreens containing these natural ingredients may be more affordable and offer a wider range of protection, including anti-oxidant, wound-healing, anti inflammatory, and many other benefits. Since there is high-

quality evidence that some natural sunscreen chemicals are absorbed systemically and may be causing environmental harm, those who are worrid might want to use physical sunscreens instead. Studies on the effectiveness and safety of both new and well known sunscreens are still being conducted.

REFERENCES

1) Boyd AS, Naylor M, Cameron GS, et al. The effects of chronic sunscreen use on the histologic changes of dermatoheliosis. J Am Acad Dermatol. Dec 1995; 33(6):941-6

2) COLIPA Project Team IV. European Cosmetic, Toiletry and Perfumery Association, Guideline October, Version 24.10. For BOD approval, Method for the In-vitro Determination of UVA protection provided by sunscreen products 2006

3) Wissing SA and Muller RH. The development of an improved carrier system for Sunscreen formulations based on crystalline lipid nanoparticles. Proceedings of the 13th International Symposium on Microencapsulation; 5–7 ;: 238–239, 2001.

4) Nesseem D. Int J Cosmet Sci; 33:70-79, 2011.

5) COLIPA, European Cosmetic: SPF Test Method (Toiletry and Perfumery Association; 94: 289, 1994. 6) Medical Definitions. Definition of Sun Protection Factor. [Cited on 2011 Mar 29] Available from URL: <u>http://medical.yourdictionary.com/sun-protectionfactor</u>.

7) COLIPA Guidelines- Method for the In Vitro Determination of UVA Protection Provided by Sunscreen Products a; 1-20, 2007.

8) Woodruff J. Technical consultant to the cosmetics industry. Sunscreen basics. [Cited 2011 [Mar 28]. Available from: URL: www.creativedevelopments.co.uk.

9) Lanzendorfer et.al. Inventors, Beiersdorf AG, Hamburg DE, assignee. Use of Flavonoids as Immunomodulating or Immunoprotective Agents in Cosmetic and Dermatological Preparations. US patent 2009/0131340. May 21, 2009.

10) Food and Drug Administration. 1978. Sunscreen drug products for over-the-counter Human use; proposed safety, effective and labeling conditions. Federal Register 43/166, 38206- 69. U.S.A. Physical UVA+UVB sunscreen/sunblock: Titanium Dioxide [cited on 2011 Mar 29] 11)http://www.smartskincare.com/skinprotection/sunblock/_titanium-dioxide.html

12) Gasparro FP, Mitchnick M, Nash JF. A Review of Sunscreen and Efficacy. Photochemistry and Photobiology.; 68(3): 243-56, 1998.

13) Kirtikar and basu, Indian medicinal plants, 2nd edition, published by Lalit Basu; vol 2:1285, 1993. 14) Cantrilla R. Lutein from Tagetes erecta .Chemical and Technical assessment.63rd JECFA.2004

15) Hojnic M, Skerget M, Knez Z. Extraction of lutein from Marigold flower petals – Experimental kinetics and modeling, Food Science and Technology; 41:2008-2016, 2008.

16) Diffey BL, Robson JJ. Soc. Cosmet. Chem; 40:127-33, 1989.

17). Dutra EA, Oliveira DAGC, Kedor-Hackmann ERM, Santoro MIRM, Determination of sun protection factor (SPF) of sunscreens by ultraviolet spectrophotometry, Brazilian journal of Pharmaceutical sciences, 40 (3), 2004, 381-385.

18) Kaidbey KH. The photo protective potential of the new super potent sunscreens. J Am Acad Dermatol. Mar 1990; 22(3):449-52.