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Review on Herbal Sunscreen Lotion

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INTRODUCTION

Herbal Sunscreen (also known as herbal sunblock, is a cream, spray or other topical product that helps cover the skin from the sun's ultraviolet (UV) radiation, and which reduces sunburn and other skin damage, with the thing of lowering the threat of skin cancer with the help of herbs. In the United States, the term suntan cream generally means the reverse of sunscreen, and rather refers to cream designed to moisturize and maximize UV exposure and tanning rather than block it. Sun protection is a fundamental to look after skin and eyes from the damaging effect of the sun because exposure to ultraviolet radiation contributes to ageing skin and is the main cause of skin cancer. Some people may need to take particular care because of photosensitivity.

The effectiveness and safety of sunscreens are crucial for the environment and human health. The herbal sunscreen will not only protect the skin from the effects of harmful UV rays but also eliminate the use of chemical sunscreens. Presently, public awareness has increased regarding the safety of sunscreens using chemicals. Chemicalbased sunscreen get absorbed into the skin and causes discomfort and itchiness of the skin. Therefore, manufacturers all over the world have begun manufacturing herbal sunscreens to prevent side effects caused by synthetic chemical product.

Sunscreen lotion is a sort of product that protects against the sun's harmful rays by containing ultraviolet radiation (UV rays), which is divided into:

UVA: longest wavelength with 320-400 nm, it affects inner cells in the top of skin including dermis and causes immediate tanning and sunburn.

UVB: Medium wavelength with 290-320 nm, it affects the cells in the top layer of skin and causes delayed tanning, sunburn and blisters.

UVC: Shortest wavelength with 100-290 nm, it affects the outermost cells in the top layer of skin and causes redness, ulcers and lesions.

CLASSIFICATION OF HERBAL SUNSCREEN

Sunscreens can be classified as follows

1. Based on the mode of action:

Physical sunscreen: Reflect harmful rays away from skin

E.g. zinc oxide and titanium dioxide

Chemical sunscreen: Absorbs UV rays

E.g. microfine titanium dioxide, avobenzone and oxybenzone.

The combination of both physical and chemical active ingredients is considered to be a best sunblock. Physical sun blocks are having scattering affect thereby results in whitening phenomenon while majority of organic chemicals used in sunscreen formulations have not been established as safe.

2. Based on application

Topical: They either absorb or reflect radiation to protect from harmful radiation

Oral: These are consumed orally to avoid skin damage. E.g. Carotenoids

Topical sunscreens are divided into two classes based on their mechanism of protection

1. Organic Sunscreen: Organic sunscreen works by absorbing into skin and converting UV rays into heat. It is thin and ideal for everyday use allow for skincare ingredients to be added easily. Organic sunscreen actives chemical carbon-based compound it contains non mineral active ingredient.

2. Inorganic sunscreen: These are particles that scatter and reflect UV rays back to the environment they act as physical barrier to indent ultraviolet and uv light. They are considered broad spectrum as they

cover entire ultraviolet spectrum the Inorganic sunscreen is also referred to as sunblock.

IDEAL PROPERTIES OF HERBAL SUNSCREEN

- It should be able to provide complete protection for skin
- It should be safe effective, chemically inert, at low concentration
- It should not cause irritation, sensitization and toxicity
- It should not stain Filtering
- It should be non-Comedogenic
- Activity against UVB and UVA radiation
- It should have hydrating properties
- It absorb a broad range of UV rays causing sunburn
- It should have light weight texture that absorb quickly
- It should be free from harmful chemicals
- It should be economical
- Easy application

BENEFITS OF HERBAL SUNSCREEN

- Broad -spectrum protection against UVA and UVB rays
- Prevent hyperpigmentation
- Promotes skin regeneration
- Anti- Inflammatory properties
- Reduce risk of skin cancer
- Improve skin Elasticity
- It helps to relieve pain and redness associated with sunburn
- Long lasting protection
- Act as natural sunblock

MECHANISM OF PHOTOPROTECTION

Sunscreens act by preventing and minimizing the damaging effects of the ultraviolet sun rays following exposure to the sun.

They primarily work through two mechanisms:

A. Scattering and reflection of UV energy from the skin surface. Mineral based (Inorganic) sunscreens work primarily through this mechanism.

B. They provide a coating that blocks sun rays from penetrating through the skin.

LITERATURE SURVEY

1. Gurubarik Neelima et al. (2016)

Formulation of herbal sunscreen formulation and evaluation of its sun protection activity is an important aspect in the cosmetic industry. The aim of the present study was to formulate and evaluate the sun protection factor of poly herbal sunscreen cream. In this study five sunscreen creams were formulated using various herbal oils and tested for physiochemical parameters such as color, spreadability, viscosity, limit test for lead, consistency, odour, appearance. Studies like thermal stability, phase separation, liquefaction, centrifugation to check stability and patch test for irritancy were done.

2.Nslin Jaiswal et al. (2017)

Formulation of sunscreen having several natural ingredients, inclusive of Henna, Sage (Maramiah), Aloe Vera, Coconut oil , Sesame oil, Almond oil, Dark chocolate, Green Herbal tea, Turmeric water, Saffron extraction, Sesame extract andrash cream, were used to prepare different batches of formulations, based on amounts,followed by various altering processes, such as blending the plant ingredients, sifting the blended material of any unwanted residues, boiling a weighed amounts, followed by various altering processes, such as blending the plant ingredients, sifting the blended material of any unwanted residues, boiling a weighed amount of the blended herbwith certain amount of water, along with a combination of other ingredients, and finally filtering the liquid material of any wastes.

3.A.Mosa et al. (2019)

The aim of this research was to develop sunscreen cream formulation with natural ingredients and calculated sun protection factor (SPF) for it. The sunscreen is prepared using water phase that includes distilled water as a main solvent, glycerine as a moisturizer, Arabic gum as a thickener, and citric acid as a preservative.The oil phase is composed of one of the following oils: paraffin oil, olive oil, sesame oilor pond oil, and beeswax foundation as emulsifier.

4.Zeel shaal et al. (2022).

Formulated and evaluated Poly herbal skin clarifying and UV protection cream is a herbal cream which was formulated for the purpose of moisturizing, hydrating, making skin supple, antiaging, antiwrinkle, depigmentation, antioxidant,maintaining skin Ph, nourishing, UV protection and treatment of various skin diseases like hyperpigmentation, wrinkles, acne, skin aging, photoaging, tanning.

5.Laxmikant Kantilal Banswal et al. (2023)
Studied to develop herbal topical sunscreen formulation based on some fixed oils, in combination with some medical plants. The objective of this work is to formulate and evaluate a cosmetic (Herbal sunscreen) for protection of skin from the natural ingredients which have different properties such as emollient, moisturizer, base, anti-acne, anti sweatning in the ingredients such as Aloevera, Butterfly pea flower. The FDA recently released its final orders concerning the labelling of sunscreen. The final monograph updates the tentative final monograph regarding over the counter (OTC) sunscreen products. Among the labelling standards are removals of the term "sun block"inclusion of a statement detailing the importance of sunscreen to prevent harmful effectsof the sun, three sun protection categories: minimum, moderate, high, a new SPF category of 30+ for products with SPF values greater than 30, uniform and streamlined labelling for all sunscreen.

AIM

To study the Herbal Sunscreen Lotion which protect skin from harmful UV radiation while minimizing the risk of irritation and environmental impact.

OBJECTIVE

- To provide good protection against UVA and UVB sunburn and long term skin damage.
- To minimize the environmental imapct by utilizing biodegradable and sustainable products that are safe for marine life.
- To study the product that are suitable for sensitive skin, reducing the risk of irritation or allergic reaction.
- To incorporate traditional knowledge and practices, connecting consumers with cultural and historical significance.
- To identify which plant based ingredients provide sun protection.

EQUIPMENT USED
- Digital pH meter
- EnvironmentalTest Chamber
- Autoclave
- Brookfield viscometer
- Incubator

LIST OF KEY INGREDIENTS AND THEIR ROLE

Sr.no	Ingredients	Role of Ingredients
1.	Aloe vera gel	Prevent sunburn
2.	Coconut oil	Moisturizer
3.	Rose oil	Emollient
4.	Glycerine	Humectant
5.	Turmeric Extract	Anti-inflammatory Effect
6.	Vitamin E	Antioxidant
7.	Rose water	Antibacterial
8.	Honey	Preservative
9	Tomato Extract	UV protection
10	Lemon	Emollient
12	Sesame oil	moisturizer
13	Green tea	Sunscreen agent
14	Almond oil	Antioxidant

PLANT PROFILE

ALOE VERA

- Biological source: Dried latex of leaves of it also known as cape aloe
- Family- Liliaceae
- Description
- Colour - Clear to slightly yellow or translucent gold
- Odour - Similar like rotten garlic or onion
- Taste - Bitter
- Chemical constituents- aloe emodin
- Uses- heals burns and clears acne

TURMERIC POWDER

- Biological source - It consists of dried rhizomes of Curcuma longa
- Family- Zingiberaceae
- Description
- Colour – Yellow
- Odour – Aromatic
- Taste – Bitter
- Chemical constituents - Curcumin, Curcuminoids
- Uses -Reduce acne, Glowing skin, Lightens skin

TOMATO EXTRACT

- Biological source - It consist of fruit of plant solanum lycopersicum
- Family- Solanaceae
- Description
- Colour – Red
- Odour- earthy and spicy odour
- Taste - sweet - sour
- chemical constituents –lycopene
- Uses - protect skin from UV B induces photodamage

COCONUT OIL

- Biological source - Coconut oil is extracted from the seed of the Cocos nucifera plant.
- Family - Aceraceae
- Description
- Colour - Colourless to pale yellow
- Odour - Sweet
- Taste - slightly sweet or nutty
- Chemical constituents – Lauric acid, capric acid, palmitic acid
- Uses – moisturizer, Anti-aging, Anti inflammatory

FORMULATION TABLE

Sr.no	Ingredients (20ml)	Quantity	Role
1	Coconut oil	3ml	Moisturizer
2	Sesame oil	2ml	Emollient
3	Aloe vera gel	2ml	Sunscreen agent
4	Zinc oxide	1.8ml	Sunscreen agent
5	Turmeric extract	0.8ml	Antioxidant
6	Phenoxyethanol	0.4ml	Preservative
7	Distilled water	10ml	Vehicle

EVAULATION OF HERBAL SUNSCREEN LOTION

1. Physical parameters
2. Spreadability test
3. Thermal stability
4. In vitro occlusion test
5. Irritancy test
6. Microbial test
7. Consistency test
8. Determination of viscosity
9. Washability test
10. Stability test

CONCLUSION

The study of herbal sunscreen lotions emphasizes their promise as an effective, natural alternative to traditional synthetic sunscreen. Herbal sunscreen lotions, which combine natural components with efficient sun protection, represent a promising area of innovation in the sun care sector. Although they have many advantages, such as supporting skin health and being friendly for the environment, issues including texture, SPF effectiveness, and formulation complexity need to be resolved. Advances in product development and ingredient research could make herbal sunscreens a popular choice for customers seeking sustainable and natural sun protection.

As the market for organic and eco-friendly products expands, the development of more effective and visually appealing herbal sunscreens may encourage broader acceptance and provide a viable alternative to synthetic choices.

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