

Formulation and Assessment of Poly-Organic Sunscreen Using *Cymbopogon Citratus*

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ABSTRACT

Degradation in environment such as global warming, water and air pollution, ozone layer depletion etc. seems to affect health and skin of human beings causing severe damages to our skin thereby giving rise to dryness and itchiness to our skin. Currently herbal sunscreens are used by almost 85% of people alive on the earth to protect their skin from UV-radiation, heat, premature aging etc. The concept of beauty and use of cosmetics is demanding from ancient time. Sunscreens also help us to prevent our skin from cancer and sunburn caused by several medicines such as anthracene, benzophenone etc. It also prevents from itching, redness and dryness of skin. Herbal cosmetics are naturally produced and are far from harmful chemicals which otherwise may be toxic to our skin. Our aim and objective is to prepare herbal/organic sunscreen using natural and synthetic ingredients such as: lemon grass (*Cymbopogon citratus*), coconut oil (*Cocos nucifera*), green tea extract, almond oil, aloe vera, rose water (*Rosa rubiginosa*), Vitamin E, glycerin, seed oil, zinc oxide, titanium dioxide etc. having high SPF, good anti-microbial, anti-oxidant, anti-inflammatory activities and more important for UVA/UVB protection. The credibility of the formulations will be found by calculating its SPF. Different formulations of sunscreen from F1 to F7 were evaluated for various parameters like pH, color, odor, spreadability, washability, non-irritancy test, consistency, viscosity, stability, physical appearance. The study of these parameters of formulated product will give us idea about which conformation of extract would be stable and hence safe. It can bring to an end that poly-organic cream without much side effect can be used as an action of providing barrier to avoid aging and protect the skin from harmful UV rays.

KEYWORDS: UV, PH, SPF, Glycerin, Lemon Grass

INTRODUCTION:

In ancient days, people used to apply herbal products such as turmeric, tea leaves extract, cucumber, potato, aloe vera, lemon, hibiscus leaves extract, rose water etc. on their skin only because various kinds of sunscreens were not available in the market but now a days people are used to variety of synthetic and organic/herbal sunscreens. Now a days, the ingredients which are used individually are now combined in a particular product which influences our skin in a better way. Sunscreen is a photoprotective product for the skin [1]. These days the use of sunscreen is necessarily important to safe guard our skin from harmful ultraviolet and gamma rays. The main aim of this research is to prepare polyherbal/poly-organic sunscreen by use of different natural and synthetic polymers. Basic ingredients used are Aloe Vera, lemon grass,

rose water, almond oil, coconut oil, zinc oxide, titanium dioxide etc. The poly-organic sun protecting cream will not only safe guard our skin from the harmful effects of UV rays but also stop us from using various kinds of chemical sunscreens found in the market [2]. The risk of skin cancer can be decreased by stopping harmful UV radiations from reaching our skin [3]. During the survey, it is found that there are many sunscreen formulations available in markets which are used in protection of skin from UV rays [4]. The ultimate technique of skin damage by UV radiation is formation of Reactive Oxygen Species (ROS) [5].

Melanoma, also known as malignant melanoma is a type of cancer that develops from the pigment producing cells. Melanoma usually occurs in the skin but rarely seems to occur in mouth, eyes, back and legs.

Squamous cell carcinoma is a type of cancer that starts as a growth of cells on the skin.

Cosmetics are being produced to reduce wrinkles and to fight against acne. These herbal products are different from the market normal product, these are being produced naturally with proper ailments, natural products which are healthy for any type of skin.

From 20th century, the use of silicone-based materials in hair/skin products has been well known. Dimethicone, the first silicone family was commercially used in cosmetics industry. Dimethicone is popularly used in skin care products. In 1940s, Revlon launched Silicare skin lotion, which became extremely popular and attracted the interest of customers and manufacturers [6].

In 21st century, cosmetic and beauty related industries are rising gradually and increasing rapidly with the use of new synthetic and natural products that are directly or indirectly dependent on polymers.

Sunscreens can be formulated by both natural and synthetic polymers. Those sunscreens which are formulated from natural polymers such as from plants are herbal or organic and safe for skin while those sunscreens which are formulated from synthetic products are made chemically which is harmful to our skin which may thereby cause itching, rashes, burning sensation and even bacterial infections to our skin. Due to environmental degradation, the heat and pollution is causing damage to our skin. Due to this even males and children are also using various formulations of sunscreens, moisturizers and different kinds of creams to protect their skin from harmful environmental effects.

As of 2021, only zinc oxide and titanium dioxide are proved to be safe and effective by Food and Drug Administration.

REVIEW ARTICLE:

1. **T Mangilal et al.** found that the combination of extracts of Olive oil and green tea in different ratio gave versatile effect such as whitening to our skin, wrinkleless skin, anti-aging and effect of sunscreen and is safe for 12 months.
2. **Yamini Shah et al.** did the study between C₁ and C₄ compositions where C₄ is concluded to have a very high amount of phenol and flavonoid content due to the combination of three extracts viz. Glycyrrhiza glabra, Tinospora codifolia and Terminilia arjuna and hence it shows a very high SPF value and can be effectively used by all kinds of age groups.
3. **Arun Rasheed et al.** found on their study that the formulation F₂ having curcumin is more stable with high SPF.
4. **Mukund Manikrao Donglikar et al.** in present study found that curcumin, quercetin, resveratrol and safranal are incorporated together to develop all in one sunscreen.

5. **Aman S. Maharaj et al.** study found that Ultra Violet Spectroscopy is the most coherent and justifiable approach for determination of production of herbal sunscreens. Since, chemicals such as avobenzene, octocrylene, oxybenzone are very harmful for skin so herbal sunscreens are more advantageous.
6. **Dr. Hingane L. D. et al.** study found that herbal sunscreen that is extracted from butterfly pea flower prevents from sunburn.
7. **Thais F. R. Alves et al.** study found that polymers can be used in skin, teeth, hair and nail care. The versatile behavior of polymers must be characterized in respect of biopharmaceutical activity, functional properties and environmental safety.
8. **Pranati Srivastava et al.** found that peoples attitude changed due to the side effects of synthetic polymers and they prefer naturally occurring polymers that contain anti-aging agents, sun protecting agents, etc.
9. **Anusha V et al. Study** found that the proportion of extracts and base of cream of F₃ was more stable and safe and it is possible to develop creams containing herbal extracts and hence a poly-herbal cream which is non-toxic and safe and improves patient compliance with the use of herbal extracts was formulated and evaluated.

CONCLUSION:

Sunscreens are gradually being necessarily important in our day to day life. Sunscreens play a crucial role in protecting our skin from harmful UVA and UVB radiations. The present time study aims to create a firm and sturdy poly-organic sunscreen with an appropriate SPF, pH, viscosity and to be much more effective than other market sunscreens which are full of harmful chemicals.

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