

Review on Formulation and Evaluation of Anti-Aging Cream from Dragon Fruit Peel Extract

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Abstract: Dragon fruit belongs to the cactus family (Cactaceae). *Hylocereus polyrhizus* and *Hylocereus undatus* are two commonly known varieties of dragon fruit. Dragon fruit contains several antioxidants, such as betalains, hydroxycinnamates, and flavonoids. These compounds help protect skin cells from damage caused by free radicals, which are associated with skin aging. Dragon fruit is also rich in phytochemicals, vitamins, and other beneficial substances that may help improve skin health. Its antioxidant properties may help maintain skin firmness, hydration, and a youthful appearance. Therefore, dragon fruit peel extract can be studied as a potential ingredient in anti-aging cream formulations.

Such creams may also be investigated for their possible benefits in acne management and soothing sun-exposed skin. Dragon fruit belongs to the cactus family (Cactaceae). *Hylocereus polyrhizus* and *Hylocereus undatus* are two commonly known varieties of dragon fruit. Dragon fruit contains several antioxidants, such as betalains, hydroxycinnamates, and flavonoids. These compounds help protect skin cells from damage caused by free radicals, which are associated with skin aging. Dragon fruit is also rich in phytochemicals, vitamins, and other beneficial substances that may help improve skin health. Its antioxidant properties may help maintain skin firmness, hydration, and a youthful appearance. Therefore, dragon fruit peel extract can be studied as a potential ingredient in anti-aging cream formulations. Such creams may also be investigated for their possible benefits in acne management and soothing sun-exposed skin..

Keywords: Dragon fruit

I. INTRODUCTION

Pitaya, commonly referred to as dragon fruit, is derived from multiple cactus species originally indigenous to the Americas. Prominent varieties include *Hylocereus undatus* and *Hylocereus polyrhizus*, both classified under the Cactaceae family. Due to its impressive nutritional profile and numerous potential health advantages, this fruit has gained widespread global popularity.

Various types of dragon fruit exist, featuring exterior skin colors spanning from bright yellow to deep red, paired with white or red inner pulp. Fruit weight fluctuates based on specific cultivars and environmental growth factors. Numerous tiny, edible black seeds are embedded within the pulp.

Naturally occurring flavonoids are present in the fruit's rind, whereas the edible portion supplies key antioxidants, such as betalains alongside diverse phytochemicals. These active components assist in shielding cells from oxidative damage triggered by free radicals. Furthermore, the fruit serves as a dietary source of vitamin C, B-complex vitamins (B1, B2, and B3), and vital minerals like iron, phosphorus, and calcium.

Additionally, dragon fruit provides protein, dietary fiber, and supplementary nutrients. Its substantial water content aids in body hydration, whereas the fiber promotes healthy digestion. The seeds harbor unsaturated fatty acids that enhance its overall nutritional worth. Consequently, dragon fruit serves as a valuable component for ongoing investigations into pharmaceutical, cosmetic, and nutritional applications.





Fig. 1: Dragon fruit

1.1 Dragon Fruit Face Cream for Supporting Skin Ageing Care

Dragon fruit supplies antioxidant agents capable of defending the skin against oxidative stress. Skincare creams incorporating dragon fruit extract can be explored for their potential utility in cosmetic formulations engineered to preserve youthful skin vitality and minimize visible aging indicators.

1.2 Dragon Fruit Face Cream for Acne-Prone Skin

With its content of vitamin C and additional phytochemicals, dragon fruit holds promise for topical cosmetic preparations. Its extract can be examined as a component in facial lotions targeted toward blemish-prone skin. Nevertheless, its actual efficacy relies heavily on the specific formula and mandates thorough evaluation.

1.3 Dragon Fruit Face Cream for Moisturising Sun-Exposed Skin

Containing moisture, vitamins, and other advantageous constituents, dragon fruit assists in maintaining skin hydration. Lotions infused with this botanical extract can be assessed for their capability to restore moisture levels following sun exposure. Even so, such preparations must never function as a substitute for clinically tested sun-protection products.

1.4 Dragon Fruit Face Cream for Healthy-Looking, Radiant Skin

Dragon fruit extract can be blended into cosmetic lotions designed to sustain moisture balance and enhance overall skin appearance. Prior to determining its viability for commercial cosmetics, the prepared formula should undergo rigorous testing for physical traits, including pH balance, visual texture, spreadability, consistency, and shelf stability.

MATERIALS AND METHODS

Extraction Procedure

The dragon fruit peel was separated from the fruit and dried in a hot-air oven at 70°C for 2 hours.

After drying, the peel was ground into a fine powder and passed through a sieve to remove coarse particles.

A quantity of 5 g of the powdered peel was accurately weighed and placed in a clean beaker. The prepared mixture was heated in a water bath for 1 hour to facilitate the extraction process.

The mixture was filtered to obtain the liquid extract. The remaining solid material was washed with the same solvent, if required.

The collected filtrate was allowed to cool and concentrated by removing some of the solvent. Finally, the concentrated extract was transferred into a suitable, clean container for storage.





FORMULATIN TABLE

Ingredient	Quantity	Action
Stearic acid	4gm	Emollient Iso-propyl
Alcohol	0.4ml	Anti-bacterial
Triethanolamine	0.26ml	PH modifier
Light liquid paraffin	0.7ml	Soothing agent
Acetyl alcohol	0.2gm	Emulsifier
Salicylic acid	0.0031gm	Preservative peel
Extract	5.8ml	Anti-aging activity
Glycerin	2ml	Humectant water
water	10ml	Solvent

Preparation Method

Stearic acid was transferred to an evaporating dish and liquefied over a water bath maintained at 70°C. Simultaneously, in a distinct container, propyl paraben and triethanolamine were dissolved in water, subsequently incorporating glycerin



and liquid paraffin. This formulated water-based blend was mixed with the extract and warmed in a water bath until achieving 70°C.

Upon both the water and oil phases reaching an identical temperature of 70°C, the aqueous phase was gradually introduced into the melted stearic acid while agitating constantly. The dish was subsequently taken off the heat, and agitation persisted. As the temperature dropped to 40°C, fragrance was added and blended completely. Mixing was maintained throughout the cooling phase until a sleek, consistent, and well-blended cream developed.

EVALUATION PARAMETERS

Dye Test

A small amount of scarlet red dye was incorporated into the cream formulation. A drop of the prepared sample was then placed onto a glass slide, secured with a coverslip, and observed under an optical microscope. For water-in-oil (W/O) emulsions, the internal water phase appears as clear, uncoloured droplets suspended in a red continuous phase. Conversely, in oil-in-water (O/W) systems, the inner oil phase displays a red coloration against an uncoloured aqueous background.

Skin After-Feel

The formulation was evaluated for its sensory characteristics upon topical application. A specified volume of cream was applied to assess its skin-softening (emollient) efficacy, tactile smoothness during spreading, and the extent of residual film left on the skin surface.

Smear Micro-Characteristics

Following application, the physical characteristics, texture, and visual appearance of the residual film or smear left on the skin were systematically

Appearance and Homogeneity

The manufactured cream underwent visual inspection to evaluate its physical aspect and uniformity.

Viscosity

The flow resistance of the prepared cream was measured using a Brookfield viscometer, with readings captured at a rotational speed of 100 rpm.

Spreadability

The spreadability of the formulation was tested by positioning 1 g of the cream between a pair of flat 20 cm × 20 cm plates, topped with a standard 125 g weight. After one minute, the diameter of the dispersed cream was recorded.

Skin Irritation Studies

The preparation was topically administered to human subjects, and the treated cutaneous regions were visually inspected for indicators of redness (erythema) and swelling (edema).

II. CONCLUSION

Based on the reviewed literature, dragon fruit may have potential applications in skincare formulations. Its antioxidant constituents may help protect the skin against oxidative damage and reduce the appearance of certain signs of ageing. Dragon fruit-based preparations may also support skin hydration, help maintain healthy skin, and provide soothing effects. However, further scientific studies are required to establish its effectiveness in managing acne and soothing sunburn

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