



Formulation And Evaluation Of Antiaging Cream From Dragon Fruit Peel Extract

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Abstract:

Dragon fruit, belonging to the Cactaceae family, encompasses two varieties, *Hylocereus polyrhizus* and *Hylocereus undatus*. This fruit is abundant in various antioxidants such as betalains, hydroxycinnamates, and flavonoids. These antioxidants play a crucial role in shielding cells from free radicals, thereby reducing the risk of chronic diseases and slowing down the aging process.

Additionally, dragon fruit is rich in phyto albumins and vitamin C, renowned for their antioxidant properties, which contribute to tightening and improving the flexibility of the skin, while also imparting a radiant glow. Regular application of creams containing dragon fruit extract can effectively combat aging, and it is also beneficial in treating acne and soothing sunburn. This study aims to compare the antioxidant levels and activities in the pulps and peels of two dragon fruit species, *Hylocereus undatus* (white dragon fruit) and *Hylocereus polyrhizus* (red dragon fruit). The Total Phenolic Content (TPC) assay revealed that both species' peels had higher phenolic content than their pulps. Specifically, the phenolic content in *H. undatus* peels exceeded that of *H. polyrhizus*, whereas in the pulps, the reverse was observed.

The 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay indicated that the peels of both species exhibited greater radical scavenging activities compared to their pulps. Additionally, the ferrous ion chelating (FIC) assay demonstrated moderate metal ion chelating effects in both peels and pulps of both species when compared to EDTA.

Overall, the findings suggest a significant relationship between Total Phenolic Content and primary antioxidant activities, highlighting the antioxidant potential of dragon fruit peels and pulps, and implying their potential utility in various applications.

Keywords: Acne, sunburn, Dragon fruits, herbal cream, anti-ageing.

Introduction:

Dragon fruit (*Hylocereus* spp.) is a promising tropical fruit which can be cultivated in different tropical and subtropical parts of the world such as Southeast Asia, and Central and South America. The demand for dragon fruit extensively increases and the fruit today can be found on almost all exotic fruit markets around the world. This success can be partly explained by the fruit qualities, e.g. appearance, nutritional values and health benefits, but also by the commercial policies of producing and exporting countries such as Thailand and Vietnam, which are the main producing countries of dragon fruit.

Tropical fruit crops in Thailand are steadily becoming an important aspect of agricultural production. The exports of fresh and processed tropical fruits from Thailand have shown upward trends since 1980 (Salakpetch, 2000). Besides being consumed fresh, dragon fruit can also be processed into, for example, juice and puree. Dragon fruit and its products may be used as ingredients for innovative food products that respond to consumers' interest (Le Bellec et al., 2006; Sabbe et al., 2009). They are widely used in various food products such as sweets, yogurts, ice creams, pastries, jams, jellies and wines. This is due to its special color (especially red/purple pigments in red-flesh dragon fruit), high nutritional values and antioxidative properties of the fruit (Mohd, 2010). A high increase in dragon fruit processing results in high amounts of waste materials such as peels and seeds. Since food waste management is a serious environmental issue, converting these wastes into value-added components must be given more attention.

Therefore, the knowledge related to the characterization of dragon fruit is necessary to improve the quality of dragon fruit and its co-products. This literature review is intended to give a complete background of dragon fruit. It involves key information about classification, cultivation, harvesting, production and marketing as well as fruit composition (e.g. chemical, pigment and antioxidative components) of the fruit. A concise overview of available research relating to dragon fruit is also given. The knowledge of freeze-drying technology and thermal processing, and a critical review of research dealing with the impact of these processing technologies on important attributes of various fruits are included. The chemical properties (e.g. fatty acid composition and nutrients) and oxidative stability of the seed oils are described.

Anti-aging creams are predominantly moisturizer-based skin care products marketed with unproven claims of making the consumer look younger by reducing, masking or preventing signs of skin aging.

Antioxidants: Dragon fruit peel contains antioxidants such as vitamin C, flavonoids, and phenolic compounds, which help protect the skin from oxidative stress and damage caused by free radicals, thus potentially reducing signs of aging.



Fig:- 1 Dragon Fruit

Fig:- 2 Dragon Fruit Plant

Fig:- 3 Dragon Fruit Peel

Properties of dragon fruit peel extract cream:

Dragon fruit peel extract cream offers a multitude of potential uses and benefits, thanks to its rich composition of antioxidants, vitamins, and other bioactive compounds. Some of the key uses and advantages include:

Anti-aging Properties: The antioxidant-rich nature of dragon fruit peel extract helps combat free radicals, thereby reducing oxidative stress and minimizing the appearance of wrinkles, fine lines, and other signs of aging.

- **Skin Hydration:** Dragon fruit peel extract is known for its moisturizing properties, helping to hydrate the skin and maintain its natural moisture barrier. This makes the cream ideal for individuals with dry or dehydrated skin.
- **Skin Brightening:** The presence of vitamin C in dragon fruit peel extract can contribute to a more radiant complexion by reducing the appearance of dark spots, hyperpigmentation, and uneven skin tone.
- **Anti-inflammatory Effects:** Dragon fruit peel extract contains compounds with anti-inflammatory properties, making the cream beneficial for soothing irritated or inflamed skin conditions such as acne, sunburns, or rosacea.
- **Collagen Support:** Vitamin C in dragon fruit peel extract promotes collagen synthesis, which is essential for maintaining skin elasticity and firmness. Regular use of the cream can help improve skin texture and resilience.
- **Natural Skincare:** As a natural ingredient, dragon fruit peel extract offers a gentle yet effective alternative to synthetic skincare products, making it suitable for individuals with sensitive skin or those seeking natural skincare solutions.

- **Environmental Protection:** The antioxidants present in dragon fruit peel extract help protect the skin from environmental aggressors such as pollution and UV radiation, reducing the risk of premature aging and damage.
- Overall, dragon fruit peel extract cream provides a holistic approach to skincare, offering hydration, anti-aging benefits, skin brightening effects, and protection against environmental stressors.

Formulation table :

Batch no.1

Ingredients	Quantity	Action
Stearic acid	4 gm	Emollient
Iso-propyl alcohol	0.4 ml	Anti-bacterial
Triethanolamine	0.26 ml	PH modifier
Light liquid paraffin	0.7 ml	Soothing agent
Cetyl alcohol	0.2 gm	Emulsifier
Salicylic acid	0.0031 gm	Preservative
Peel extract	5.8 ml	Anti- aging activity
Glycerine	2 ml	Humectant
Water	10 ml	Solvent

Evaluation test :

1 Appearance and Homogeneity :

Developed cream was tested for physical appearance and Homogeneity by visual observation.

2 Viscosity :

The measurement of viscosity of prepared cream was measured using Brookfield Viscometer. The reading was

taken at 100rpm.

3 Spreadability :

The Spreadability of the cream formulation was determined by measuring the spreading diameter of 1g of cream

between two horizontal plates (20cm*20cm) after one minute. The standard weight applied on the upper

plate was

125g.

4 Skin Irritation Studies :

Cream was applied on the human volunteers and treated skin was examined visually for erythema and oedema.

5 Dye 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 occurs in w/o type Cream i.e. the disperse globules appear

color less in the red ground. Globules appear red the ground colorless. The Cream is o/w type i.e. reverse condition.

6 After feel :

Emolliency, slipperiness and amount of residue left after the application of fixed amount of Cream was checked.

7 Type of smear :

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

Paraphrase this

Physical Appearance and Uniformity:

The cream's visual appearance and uniformity were assessed.

Thickness:

The cream's viscosity was measured using a Brookfield Viscometer at 100rpm.

Spreadability:

The cream's spreadability was determined by measuring the spread diameter of 1g of cream between two plates after one minute, with a standard weight of 125g applied on the upper plate.

Skin Irritation Evaluation:

Volunteers' skin treated with the cream was visually examined for redness and swelling.

Dye Test:

Scarlet red dye was mixed with the cream, then a drop of the mixture was placed on a microscopic slide, covered with a cover slip, and examined under a microscope to determine the type of cream.

Post-Application Sensation:

The cream's emollient properties, slipperiness, and residue amount after application were evaluated.

Film Formation:

The type of film or residue left on the skin after cream application was assessed.

Conclusion:

In conclusion, the literature reviewed highlights the significant potential of dragon fruit peel extract cream as a promising ingredient in skincare formulations. The chemical composition of dragon fruit peel extract, rich in polyphenols, flavonoids, and vitamin C, underscores its antioxidant, anti-inflammatory, and moisturizing properties, all of which are crucial for skin health. Numerous studies have demonstrated the efficacy of dragon fruit peel extract cream in addressing various skincare concerns. These include antioxidant protection against free radicals, anti-inflammatory effects that alleviate skin irritation, and hydration benefits for improving skin moisture levels. Additionally, preliminary findings suggest its potential in reducing wrinkle depth and improving skin elasticity, indicating promising anti-aging properties. While clinical studies have shown promising results regarding the efficacy and safety of dragon fruit peel extract cream, further research is warranted to fully elucidate its mechanisms of action and optimize its application in skincare products. Long-term safety assessments, as well as additional clinical trials across diverse populations, would provide valuable insights into its suitability for widespread use.

Overall, dragon fruit peel extract cream represents a natural, multifunctional ingredient with the potential to enhance skincare formulations, offering consumers a holistic approach to skincare that harnesses the power of botanical extracts. As research in this area continues to evolve, dragon fruit peel extract is poised to emerge as a valuable asset in the quest for healthier, more radiant skin.

Result :

EVALUATION PARAMETER	RESULT OBTAINED
Colour	Light pink
Odour	Mild sweat
Stability	Stable
pH	5.0
Irritancy	Non irritant to skin

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