



Archives of The Medicine and Case Reports

Journal Homepage: <https://hmpublisher.com/index.php/AMCR>
eISSN: 2747-2051



The Potential of Red Dragon Fruit (*Hylocereus polyrhizus*) as a Hair Dye

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ARTICLE INFO

Keywords:

Hylocereus polyrhizus

Hair dye

Cosmetic

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All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/amcr.v3i4.218>

ABSTRACT

Hair coloring is the act of changing the hair color, which has been known since the times of Egypt, Ancient Greece, Ancient China, and India. At that time, the colors used that came from plants were called vegetable dyes or traditional dyes, where the coloring was done to change the original hair color or to cover gray hair and follow the existing trends. Natural dyes are not only used as medicine but can also be used as cosmetic dyes. One of the natural ingredients that can be used to make hair dye preparations is the skin of red dragon fruit (*Hylocereus Polyrhizus*). In general, dragon fruit skin is rarely used properly, even thrown away when finished) It's just that many people don't know how to use it, thus increasing the amount of waste from dragon fruit skin.

1. Introduction

Cosmetics are materials or preparations intended for use on external parts of the human body such as skin, hair, nails, lips, and external genitalia, or teeth and mucous membranes of the mouth, cleaning, perfume making, and appearance modification. And/or improve body odor or protect and maintain the body in good condition. One of the most common types of preparations is hair dye, and hair dye preparations are cosmetic preparations used in hair makeup to give the hair its original color or with another color. The coloring factor in cosmetic preparations is very important. An attractive and harmonious coloring effect is the main goal of cosmetic users.¹

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time, the colors used that came from plants were called vegetable dyes or traditional dyes, where the coloring was done to change the original hair color or to cover gray hair and follow the existing trends. To meet these needs, cosmetic manufacturers produce various kinds of hair dye preparations, but most of the hair dyes circulating in the community mainly use synthetic dyes.²

Natural dyes are not only used as medicine but can also be used as cosmetic dyes. One of the natural ingredients that can be used to make hair dye preparations is the skin of red dragon fruit (*Hylocereus Polyrhizus*). In general, dragon fruit skin is rarely used properly, even thrown away when finished) It's just that many people don't know how to use it, thus increasing the amount of waste from dragon fruit skin.



In addition, previous studies have shown that anthocyanin compounds are used as natural dyes.³

Dragon fruit extract

The use of red dragon fruit peel extract as a natural dye in the manufacture of hair dye preparations begins with the preparation of a natural hair dye solution of red dragon skin extract with concentrations of 25%, 50%, and 75%. Extraction of anthocyanin compounds in red dragon fruit peel was carried out by immersion in water and citric acid solvent in a ratio of 9:1. The results showed that the physical quality of the natural hair dye solution was that it had good clarity, the pH was in the range of pH values determined by SNI and fastness.⁴⁻⁶

Preparation of hair dye

The first step is to make simplicia powder from the skin of the red dragon fruit. Next, the extraction process was carried out by immersing simplicia in ethanol: citric acid 70% with a ratio of 1:10 for 1 x 24 hours and with occasional stirring, then maceration filtration was carried out to obtain a liquid extract. Then concentrated using a water bath to produce a thick liquid extract. Then proceed by mixing copper (II) sulfate, nipagin, pyrogallol, and xanthan gum into a mortar, then pounded with a mortar until the product is homogeneous, then add distilled water up to 40 ml and stir again until the results are homogeneous, then put into a container.⁷⁻¹⁰

Formulation of hair dye preparations from dragon fruit

There are 3 formulations of hair dye preparations, namely 8%, 10%, and 12%. Each preparation includes pyrogallol, 1% copper (II) sulfate, 1% xanthan gum, and 1% nipagin. As much as 8%, 10%, and 12% dragon fruit extract are contained in each preparation. The color produced by the red dragon fruit peel extract hair dye for virgin hair in each formula is not at all, or the color remains black as before, while the hair that has been bleached 1x in formula 1 produces a red-

blonde color, in formula 2 produces a color purplish-red, while formula 3 produces a purple color close to black or dark purple.¹¹

2. Conclusion

Red dragon fruit peel extract has the potential to be developed as a natural hair dye preparation.

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