



# Archives of The Medicine and Case Reports

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



## Review of Anti-Aging Potential in *Aloe vera*, *Eleutherine palmifolia*, and *Hylocereus polyrhizus*: A Narrative Literature Review

Fera Anggraeni<sup>1</sup>, Retna Ayu Septiani<sup>1\*</sup>, Tita Ruhdiana<sup>1</sup>, Nia Yuniarsih<sup>1</sup>

<sup>1</sup>Faculty of Pharmacy, Universitas Buana Perjuangan Karawang, Karawang, Indonesia

### ARTICLE INFO

#### Keywords:

*Aloe vera*  
*Eleutherine palmifolia*  
*Hylocereus polyrhizus*  
Anti-aging  
Antioxidant

#### \*Corresponding author:

Retna Ayu Septiani

#### E-mail address:

[fm19.retnaseptiani@mhs.ubpkarawang.ac.id](mailto:fm19.retnaseptiani@mhs.ubpkarawang.ac.id)

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

<https://doi.org/10.37275/amcr.v3i3.212>

### ABSTRACT

Skin aging is usually characterized by dry, scaly, rough skin conditions accompanied by the appearance of wrinkles and black spots or spots. This literature review aims to discuss the anti-aging potential of Indonesian herbal plants. The aloe vera plant contains various compositions that are useful as skin moisturizers, hair fertilizers, antiseptics, antibiotics, antioxidants, anti-aging, and various other functions. Aloe vera leaves contain vitamins and minerals. One example is vitamin E. Dayak leeks contain an antioxidant IC<sub>50</sub> of 45.33 ppm, which can overcome the aging of the skin. Dragon fruit skin contains an antioxidant IC<sub>50</sub> of 9.837 mg/mL.

### 1. Introduction

Cosmetic products are used to protect the skin from harmful agents, both endogenous and exogenous. The ingredients in cosmetic formulations can support skin health, texture, and integrity, moisturize, and maintain skin elasticity.<sup>1</sup> Skin is the outermost layer that will be exposed to environmental oxidative materials that can cause skin disorders, and one of them is premature aging. Premature aging can occur due to environmental factors, namely sunlight, humidity, temperature, cigarette smoke, and air pollution.<sup>2</sup>

The aging process of aging is a biological process that occurs naturally and affects all living things, including all organs of the body, such as the heart, lungs, brain, kidneys, including the skin. Skin aging

is usually characterized by dry, scaly, rough skin conditions and is accompanied by the appearance of wrinkles and dark blemishes or spots.<sup>3</sup> the process of aging is distinguished by two names, first, the intrinsic process, which is the natural aging process that occurs over time. The biological processes that play a role in determining the number of multiplications in each cell until the cells stop dividing and then die are believed to be the cause of intrinsic aging. Second, the extrinsic aging process is an aging process that is influenced by external factors, namely excessive sun exposure, pollution, smoking habits, and unbalanced nutrition.<sup>4</sup> Free radicals, as the cause of skin aging, come from UV radiation from the sun. In living cells, UV radiation from the sun produces free radicals that can cause various photochemical risks, such as



photoisomerization and photo-oxidation. Photo-oxidation reactions occur due to the release of reactive oxygen species (ROS) in the form of superoxide anions (O<sub>2</sub>), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), and hydroxyl radicals (OH) by chromophores that absorb ultraviolet light.<sup>5</sup> This literature review aims to discuss the anti-aging potential of Indonesian herbal plants.

### Indonesian herbs that function as anti-aging

#### Aloe vera leaf (*Aloe vera* Linn.)

The Aloe vera leaf itself consists of 3 layers. The

outermost layer or protective layer is a bitter yellow latex-containing derivative of hydroxyanthracene, anthraquinone, and aloin glycosides A and B. The middle layer of the leaf is bitter yellow latex-containing anthraquinones and glycosides. And the inner layer of the leaf is a gel containing 99% water, glucomannan, amino acids, lipids, sterols, and vitamins. Other active ingredients include enzymes, minerals, sugar, lignin, saponins, salicylic acid, and amino acids. The inside of the leaf also has many monosaccharides and polysaccharides.<sup>6</sup>

Table 1. List of herbal plants with anti-aging properties

No.	Name of plant	Plant parts	Extraction method	Phytochemical content
1.	<i>Aloe vera</i> Linn <sup>7</sup>	Leaf	Macerated	Flavonoid
2.	<i>Eleutherine palmifolia</i> L.Merr <sup>8</sup>	Leaf	Maceration	Flavonoid
3.	<i>Hylocereus polyrhizus</i> <sup>9</sup>	Skin	Maceration	Antioxidant

Aloe vera plant contains various compositions that are useful as skin moisturizers, hair fertilizers, antiseptics, antibiotics, antioxidants, anti-aging, and various other functions. Aloe vera can act as a natural antioxidant because it contains several vitamins and minerals, such as vitamin C, vitamin E, vitamin A, magnesium, and secondary metabolites, such as anthraquinones, lignins, tannins, saponins, sterols, and flavonoids. Previous studies have shown that the main antioxidant potential of aloe vera is said to be mainly due to the presence of polysaccharides.<sup>10</sup> The gel contained in aloe vera visually does show constant froth grains, which refer to the presence of saponin compounds. Saponins are substances that act as antibacterial. From the parameters tested, it can be proven that the preparation of aloe vera gel has an effect or change on anti-aging that occurs on the skin, namely by the percentage of results increasing the amount of water content, increasing skin smoothness, reducing pore size, reducing the number of blemishes

and reducing wrinkles on the skin of volunteers tested.<sup>11</sup>

#### Dayak leek (*Eleutherine palmifolia* L. Merr)

Dayak leek waste is known to contain flavonoid compounds that are able to inhibit reactive oxygen species and modulate protein phosphorylation associated with inhibition of skin aging enzyme activity. The use of Dayak leek waste extract directly on the skin is certainly not practical and ineffective.

The formulation of the Dayak leek can be described as follows; Dayak leeks were macerated with 70% ethanol. The extract obtained was used as the active substance in cream preparations which were formulated with different compositions of anionic and nonionic emulsifiers. Cream with the active substance of Dayak leek waste extract that meets the physical test requirements supported by the content of flavonoid compounds in it which has very strong antioxidant activity with an IC<sub>50</sub> of 45.33 ppm, is the right product to overcome aging on aging skin.<sup>8</sup>



### Dragon fruit skin (*Hylocereus polyrhizus*)

Red dragon fruit peel has antioxidant activity related to its anthocyanin content in it.<sup>9</sup> Antioxidant compounds can be used to protect the skin from damage caused by oxidation so that they can prevent premature aging or commonly known as anti-aging. The antioxidant ability of the red dragon fruit skin can be potential as an anti-aging cosmetic.<sup>12</sup> Fresh dragon fruit peels, which had previously been sorted wet, thinly sliced, and then extracted by maceration method using a combination of 70% ethanol and 10% citric acid (9:1) solvents for 24 hours at room temperature (then macerated 2 times. Obtained and then evaporated the solvent using a rotary evaporator at a temperature of not more than 50°C to obtain a thick extract with a water content of less than 10%, and then the extract yield was calculated. The results of the antioxidant activity test showed that the red dragon fruit peel extract produced had an IC<sub>50</sub> value of 9.837 mg/mL, still much higher than the comparison, namely vitamin C, which has an IC<sub>50</sub> of 31.24 µg/mL.

### 2. Conclusion

Indonesian herbs that have the potential as anti-aging are *Aloe vera*, Dayak leek, and Dragon fruit skin. The components of this plant's potential as an antioxidant can be formulated in cosmetics and skincare.

### 3. References

1. Ishi HS, Pawar SP, Patil ST. A research: design, development, and evaluation of herbal skin lightening cream. *World J Pharmacy Pharmaceutical Sci.* 2017; 6(6):992-1003.
2. Dayan N, Skin aging handbook. 1<sup>st</sup> eds. New York: William Andrew. 2008.
3. Swastika A, Mufrod, Purwanto. Antioxidant activity of tomato extract cream (*Solanum Lycopersicum L.*). *J Traditional Medicine.* 2013; 3(18): 132-3.
4. Wahyuningsih KA. Astaxanthin provides a protective effect against photoaging. *Dan J Med.* 2011; 3(10): 149-60.
5. Wahyono P, Soetjipto, Harjantoz S. Effect of tomato juice (*Lycopersicum pyriforme*) on the prevention of skin photoaging due to ultraviolet irradiation B. *J Bina Praja.* 2011; 3(13): 169-77.
6. Aryantini D, Kristenngsih I, Kurniawati E, Lanuru AR. Physical properties and acute irritation test dermal soothing gel combination of aloe vera and dragon fruit. *The thinkers: J Ilmiah Farmasi.* 2020; 9(1): 7-13.
7. Berniyanti T, Mahmiyah E. Microbiological studies on the production of an antimicrobial agent by saponins *Aloe vera Linn* against *Streptococcus sanguinis*. *Res J Microbiol.* 2015; 10(10): 486-93.
8. Kumalasari E, Prihandiwati E. Increased productivity of agricultural waste from Dayak leek (*Eleutherine palmifolia L. Merr*) as an alternative to natural anti-aging creams *J Ilmiah Ibnu Sina.* 2019; 4: 440-451.
9. Handayani PA, Rahmawati A. Utilization of dragon fruit skin as a natural food coloring substitute for synthetic dyes. *Jurnal Bahan Alam Terbarukan.* 2012;1(2):19-24.
10. Erez H, Abraham Z. Antioxidant and healthy aging. *IMAJ.* 2003; 5(3): 368-70.
11. Iskandar B, Lukman A, Elfitri O, Safri S, Surboyo MDC. Formulation and test of anti-aging activity of aloe vera slime gel (*Aloe vera Linn.*). *J Ilmu Kefarmasian Indonesia.* 2021; 19(2): 154-65.
12. Masaki H. Role of antioxidant in skin: anti-aging effect. *J Dermatological Sci.* 2010; 58: 85-90.

