



The Potential of Turmeric Rhizome Extract in the Preparation of Cosmetic Creams and Lotions: A Systematic Literature Review

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ABSTRACT

Turmeric (*Curcuma longa*) is one of the spices that have been used traditionally in medicine and beauty in various cultures for centuries. The utilization of turmeric rhizome as a cosmetic component lotion or cream is believed to be able to enhance the efficacy of these cosmetics. This study aimed to describe the potential of turmeric rhizome extract in cosmetic preparations and lotion. The literature search process was carried out on various databases (PubMed, Web of Sciences, EMBASE, Cochrane Libraries, and Google Scholar) regarding the potential of turmeric in cosmetics. The search was performed using the terms: (1) "turmeric" OR "turmeric" OR "*Curcuma longa*" OR "*Curcuma domestica*" OR "turmeric in cosmetic" AND (2) "*Curcuma longa*" OR "turmeric". A powerful antioxidant and anti-inflammatory, which can help fight signs of aging on the skin. The active compounds of curcumin in turmeric are anti-inflammatory, antimicrobial, and powerful antioxidants. The combination of these properties makes it an attractive choice for use in cosmetics a cream specifically designed for wound healing on the skin. Studies have shown that curcumin in turmeric can reduce sebum production by the sebaceous glands, reducing the likelihood of acne formation. In conclusion, turmeric rhizome extract has the potential to antiaging, wound healing, and anti-acne in cosmetics in the form of cream or lotion.

1. Introduction

Skin care based on natural ingredients is now widely used as an active cosmetic ingredient, one of which is turmeric rhizome.^{1,2} Turmeric (*Curcuma domestica* syn. *Curcuma longa*) is a plant that has various benefits in cosmetics. The main active ingredient in turmeric is a compound called curcumin, which gives turmeric its characteristic yellow color and also has anti-inflammatory and antioxidant properties.²⁻⁴ The content of turmeric rhizome consists of alkaloid compounds, flavonoids, tannins, curcumin, and essential oils. In other studies, it is stated that turmeric has other properties such as improving appetite, antiseptic, itch reliever on the skin, antibacterial and anti-inflammatory.

The utilization of turmeric rhizome as a cosmetic component lotion or cream is believed to be able to enhance the efficacy of these cosmetics. Curcumin's anti-inflammatory properties help reduce inflammation in the skin that can be caused by conditions such as acne, eczema, or dermatitis. Topical use of turmeric in the form of masks or creams can help relieve redness and irritation of the skin. Turmeric can help lighten the skin due to its natural bleaching properties. Curcumin helps inhibit excessive melanin production, which can reduce hyperpigmentation and blemishes on the skin. This makes turmeric often used in facial care products that aim to disguise dark spots or acne scars.^{5,6}

Turmeric contains antioxidants that help fight free radical damage and oxidative stress, which are major contributing factors to skin aging. Its astringent properties help control excess oil production on the skin. This is beneficial for those with oily or acne-prone skin. By reducing excess oil, turmeric can help keep the skin fresh and free from excess oil problems. Turmeric's anti-inflammatory properties are also useful in relieving skin irritation, for example, after exposure to sunlight or after certain facial treatments. Topical use of turmeric can help relieve redness, swelling, and irritation associated with skin reactions.⁷⁻⁹ This study aimed to describe the potential of turmeric rhizome extract in cosmetic preparations and lotion.

2. Methods

The literature search process was carried out on various databases (PubMed, Web of Sciences,

EMBASE, Cochrane Libraries, and Google Scholar) regarding the potential of turmeric in cosmetic. The search was performed using the terms: (1) "kunyit" OR "turmeric" OR "Curcuma longa" OR "Curcuma domestica" OR "turmeric in cosmetic" AND (2) "Curcuma longa" OR "turmeric." The literature is limited to preclinical studies and published in English. The literature selection criteria are articles published in the form of original articles, an experimental study about cosmetic uses of *Curcuma longa*, studies were conducted in a timeframe from 2013-2023, and the main outcome was cosmetic uses of *Curcuma longa*. Meanwhile, the exclusion criteria were animal models that were not related to medicinal uses, the absence of a control group, and duplication of publications. This study follows the preferred reporting items for systematic reviews and meta-analysis (PRISMA) recommendations.

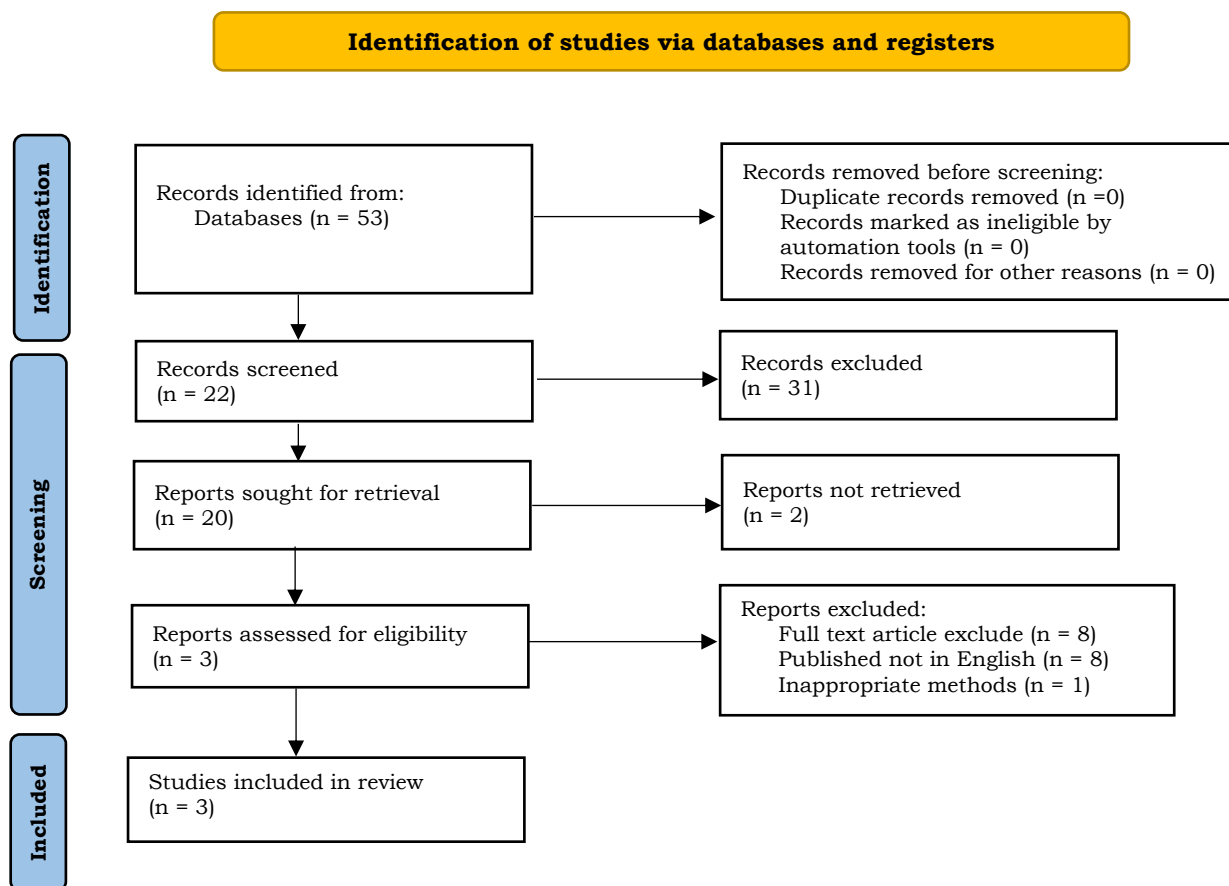


Figure 1. Research PRISMA diagram.

3. Results and Discussion

Utilization of turmeric as anti-aging in cosmetics

Apart from providing taste and aroma to food, turmeric has also been known to have various health benefits, including as an anti-aging agent in the cosmetic industry. One of the main active components in turmeric is curcumin, which gives the spice its golden yellow color. Curcumin has strong antioxidant and anti-inflammatory properties, which can help fight signs of aging on the skin. Exposure to sunlight, pollution, and other environmental factors can cause oxidative stress, which produces free radicals that damage the skin. The antioxidants in turmeric can help protect the skin from this free radical damage, thereby reducing signs of aging, such as fine lines, wrinkles, and age spots.^{10,11}

Turmeric is also known to have the ability to prevent the loss of collagen in the skin. Collagen is a structural protein that provides strength and suppleness to the skin. As we age, the production of collagen by the body tends to decrease, which results in loss of elasticity and wrinkling of the skin. In cosmetics, turmeric can help stimulate and maintain collagen production and humidity natural skin, thereby providing a significant anti-aging effect. Previous studies have shown topical turmeric cream to be efficacious in repairing skin damage caused by vitiligo.¹² Apart from the direct anti-aging benefits produced by turmeric, the use of this natural ingredient in cosmetics also has other advantages. Turmeric is a natural ingredient that is safe and harmless to the skin if used in the right dosage. Its hypoallergenic nature makes turmeric suitable for all skin types, including sensitive skin.

Antibacterial and wound healing

The active compound curcumin in turmeric is anti-inflammatory, antimicrobial, and a strong antioxidant. The combination of these properties makes it an attractive option for use in cosmetic creams especially designed for wound healing of the skin. Turmeric's anti-inflammatory properties help reduce inflammation around the wound. When an injury

occurs to the skin, a natural inflammatory process occurs as part of the body's response to injury. However, excessive inflammation can hinder the healing process and cause pain. Curcumin in turmeric can help inhibit the production of inflammatory mediators such as prostaglandins and cytokines, thereby reducing inflammation and accelerating wound healing.^{13,14}

In addition, the antimicrobial properties of turmeric are also very useful in preventing infection in wounds. Bacteria and other microorganisms can infect wounds and cause complications that slow down the healing process. Curcumin in turmeric has antimicrobial activity that can inhibit the growth of bacteria and other pathogenic microorganisms, thereby helping to keep wounds clean and prevent infection.

Turmeric's ability to accelerate wound healing is also related to its antioxidant properties. Oxidative stress can slow down the wound-healing process by damaging newly formed tissue.¹⁵ The antioxidants in turmeric help protect the new tissue from damage caused by free radicals, thus speeding up the wound healing process and reducing the risk of scarring.

The potency of turmeric as anti-acne

Acne is a common skin problem that occurs at various ages and can greatly affect a person's self-confidence. One natural way to deal with acne is to use turmeric. One of the main reasons turmeric is effective in treating acne is because of its anti-inflammatory properties. Acne is often caused by inflammation of the skin due to the accumulation of sebum, bacteria *Propionibacterium acnes*, and the body's inflammatory reactions. The curcumin compound in turmeric has strong anti-inflammatory properties, which help reduce inflammation in the skin associated with acne. By reducing inflammation, turmeric helps relieve the redness and swelling often associated with acne.^{16,17}

Excess sebum production is an important factor in the development of acne. Sebum is a natural oil produced by the sebaceous glands in the skin. If there is excess sebum production, it can cause clogged pores

and trigger the development of acne. Studies have shown that curcumin in turmeric can reduce the production of sebum by the sebaceous glands, reducing the chances of pimples forming.¹⁸⁻²⁰ Besides helping to deal with active acne, turmeric can also help reduce acne scars on the skin.²⁰

4. Conclusion

Turmeric rhizome extract has the potential for anti-aging, wound healing, and anti-acne in cream cosmetics or lotion.

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