



The Potential of Various Cosmetic Preparations of Tomato Fruit (*Solanum lycopersicum*) in Medicinal Uses: A Systematic Literature Review

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ABSTRACT

In the cosmetic field, tomatoes can be processed into various preparations that can be used to maintain and improve skin health. Extracts or other natural ingredients derived from tomatoes can be used in cosmetic products. This study is a systematic review study with the aim of exploring the potential of various tomato cosmetic preparations in improving health. The literature search process was carried out on various databases (PubMed, Web of Sciences, EMBASE, Cochrane Libraries, and Google Scholar) regarding the potential of various cosmetic preparations of tomato fruit (*Solanum lycopersicum*) in medicinal uses. This study follows the preferred reporting items for systematic reviews and meta-analysis (PRISMA) recommendations. Extracts or other natural ingredients derived from tomatoes can be used in products such as skin-lightening creams, anti-aging face masks, moisturizers, cleansing soaps, and enzyme peels.

1. Introduction

In recent decades, attention to the use of natural ingredients in beauty and skin care products has increased significantly. One natural ingredient that attracts attention is tomato. This fruit that is commonly found in the kitchen is not only a healthy food ingredient but also has a promising potential in the development of cosmetic preparations in the health sector. Tomato fruit (*Solanum lycopersicum*) has long been known for its rich nutritional content, including vitamin A, vitamin C, vitamin E, lycopene, and other antioxidants. These nutrients have been proven to provide extraordinary health benefits, but recent research has also revealed the potential of tomatoes in skin care.¹⁻⁴

In the cosmetic field, tomatoes can be processed into various preparations that can be used to maintain and improve skin health. Extracts or other natural ingredients derived from tomatoes can be used in products such as skin-lightening creams, anti-aging face masks, moisturizers, cleansing soaps, and enzyme peels. Lycopene, the compound that gives tomatoes their red color, is one of the main components that provide health benefits to the skin. These compounds have strong antioxidant properties, which help protect the skin from damage caused by free radicals and sun exposure. Thus, cosmetic products containing tomatoes can help protect the skin from signs of premature aging, reduce hyperpigmentation, and brighten the skin overall.⁵⁻⁷

In addition, tomatoes also contain vitamin C, other antioxidants, amino acids, and vitamin A, all of which have important benefits in skin care. Vitamin C helps increase the production of collagen, which keeps skin supple and moisturized. Other antioxidants help reduce cell damage, increase skin elasticity, and improve damaged skin texture. Amino acids and vitamin A play a role in repairing and moisturizing the skin. With this extraordinary potential, cosmetic preparations using tomatoes in the health field offer a natural solution for effective skin care.⁸⁻¹⁰ This study is a systematic review study with the aim of exploring the potential of various tomato cosmetic preparations in improving health.

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 various cosmetic preparations of tomato fruit (*Solanum lycopersicum*) in medicinal uses. The search was performed using the

terms: (1) "tomato fruit" OR "tomato in cosmetic" OR "*Solanum lycopersicum* in cosmetic" OR "*Solanum lycopersicum* in medicinal uses" AND (2) "*Solanum lycopersicum*" OR "cosmetic and medicinal uses" 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 medicinal uses of cosmetic preparation of *Solanum lycopersicum*, the control group only received liquid without therapeutic effect or no treatment, studies were conducted in a timeframe from 2013-2023, and the main outcome was medicinal uses of cosmetic preparation of *Solanum lycopersicum*. 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.

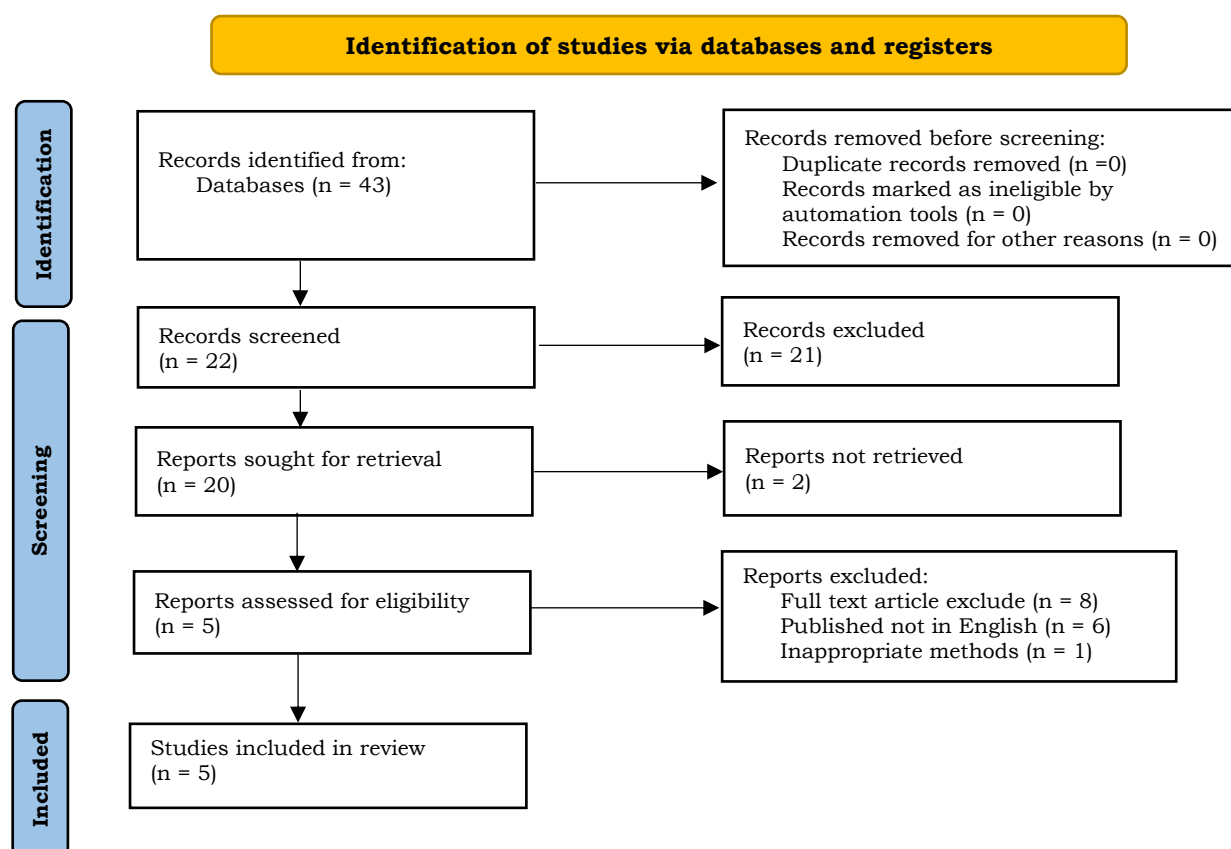


Figure 1. Research PRISMA diagram.

3. Results and Discussion

Skin lightening cream

Tomatoes contain lycopene, which is a naturally occurring red pigment compound that gives the fruit its color. Lycopene is a type of carotenoid that is also found in other fruits and vegetables, such as watermelon and carrots. Lycopene is known to have strong antioxidant properties. As an antioxidant, lycopene helps protect skin cells from damage caused by free radicals. Free radicals are unstable molecules that can damage cell structures and cause oxidative damage. Exposure to sunlight, pollution, and other environmental factors can lead to the production of free radicals in the body. Lycopene helps neutralize these free radicals and reduces the damage they can do to the skin.¹¹

In addition to protecting the skin from oxidative damage, lycopene has also been linked to skin brightening benefits and reduced hyperpigmentation. Hyperpigmentation is a condition in which there is an increased production of melanin, the pigment that gives skin its color, resulting in the appearance of dark spots or blemishes on the skin. Skin-lightening creams containing tomato extract can help reduce hyperpigmentation and brighten the skin overall. Studies have shown that using a cream or lotion containing lycopene can help protect the skin from sun damage. Lycopene works as an antioxidant that fights free radicals produced by UV rays. Studies have also shown that topical application of lycopene can reduce erythema (redness of the skin) caused by sun exposure.¹²

Anti-Aging face mask

Tomatoes contain vitamin C and other antioxidants that can benefit skin health and fight the signs of aging. Vitamin C is an essential nutrient for the production of collagen, a protein that gives skin strength and elasticity. By increasing collagen production, vitamin C can help reduce fine lines and wrinkles and increase skin elasticity. Apart from vitamin C, tomatoes also contain other antioxidants such as beta-carotene, lutein, and zeaxanthin.

Antioxidants help protect skin cells from oxidative damage caused by free radicals. Free radicals can cause oxidative stress and contribute to premature aging, including the appearance of fine lines, wrinkles, and other damage to the skin. Packed with antioxidants, tomatoes can help fight free radicals and keep skin healthy and young.¹³

The use of face masks containing tomatoes can provide additional benefits for the skin. Face masks with tomato extract or juice can provide nutrition directly to the skin and provide anti-aging benefits. In addition, face masks containing tomatoes can also provide a refreshing and cooling effect on the skin. A study shows that a face mask containing tomato extract can improve skin elasticity and reduce signs of aging. The study involved participants using a tomato mask for 10 weeks, and the results showed a significant increase in skin elasticity and a decrease in wrinkles.¹⁴

Moisturizer and serum

Tomato extract can be used in moisturizer or serum to provide additional hydration and nutrition benefits to the skin. Tomatoes contain various nutrients that are beneficial for skin health, such as amino acids, vitamin A, vitamin C, and antioxidants. Amino acids are important components in the formation of collagen, the protein that gives skin its strength and elasticity. By using skin care products that contain tomato extract, these amino acids can help repair and maintain skin tissue, as well as increase skin moisture.¹⁵

Vitamin A, contained in the form of beta-carotene in tomatoes, is necessary for skin cell growth and repair. Vitamin A helps stimulate the regeneration of new skin cells, which can help repair damaged skin, including dry and damaged skin. In addition, tomatoes also contain vitamin C, which is an important antioxidant in skin care. Vitamin C helps protect the skin from free radical damage and stimulates collagen production. This can help improve skin softness and elasticity, as well as provide a brightening effect. An in vitro study showed that tomato extract has the ability

to increase skin hydration. Components such as amino acids and carbohydrates in tomatoes can help maintain humidity in natural skin.¹⁶

Cleansing soap

Soap preparations containing tomato extract can help gently cleanse the skin and remove dirt and excess oil. This soap can also help reduce acne and control excess oil production in oily skin. Soaps containing tomato extract can provide several benefits for the skin, especially in cleansing and controlling oil. Soap with tomato extract can help gently cleanse the skin and remove dirt, excess oil, and makeup residue. This can help keep the skin clean and prevent clogged pores.¹⁷

Tomato extract has anti-inflammatory and anti-bacterial properties that can help reduce skin inflammation and relieve acne. In addition, the natural content of salicylic acid in tomatoes can also help exfoliate dead skin cells that can clog pores and cause acne. Oily skin tends to produce more natural oils, which can cause problems like acne and oily skin. Soap with tomato extract can help control excess oil production on oily skin. The content of alpha-hydroxy acids in tomatoes can help reduce the shine of the skin and maintain the skin's natural oil balance.¹⁸

Peeling enzyme

Tomato fruit contains an enzyme called a protease enzyme which can be used in peeling enzymes. Protease enzymes, such as the papain enzyme in papaya or the bromelain enzyme in pineapple, can help remove dead skin cells by dissolving the proteins that make up these cells. In the context of peeling enzymes, protease enzymes from tomatoes can help gently exfoliate the skin and remove dead skin cells, thereby stimulating new cell regeneration. This process can improve skin texture, reduce hyperpigmentation, and give skin a brighter and fresher appearance.^{19,20}

4. Conclusion

Tomato fruit (*Solanum lycopersicum*) has the potential to be developed into various cosmetic

preparations in the form of skin-lightening creams, anti-aging masks, moisturizers, serums, enzyme peels, and facial cleansing soaps.

5. References

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