



SUNFLOWER OIL AND VITILIGO: THERAPEUTIC PLAUSIBILITY BASED ON ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES

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ABSTRACT

Objective: To analyze, from a theoretical perspective, the plausibility of the topical use of sunflower oil as an adjuvant in the management of vitiligo, based on its antioxidant, anti-inflammatory, and emollient properties already described in studies focused on other chronic inflammatory dermatoses.

Theoretical Framework: The study is grounded in the pharmacobotany of *Helianthus annuus L.*, whose oil is obtained by cold pressing its achenes. It is rich in bioactive compounds such as unsaturated fatty acids, vitamin E, and phytosterols, which confer antioxidant, anti-inflammatory, and emollient properties. These attributes make the oil a promising option for topical use, especially in dermatological conditions such as vitiligo. The oil's action on the skin is related to its ability to restore the integrity of the epidermal barrier, reduce inflammation, and promote hydration — effects directly linked to the histological structure of the skin and the pathophysiology of cutaneous disorders.

Method: Narrative literature review, integrating different types of publications relevant to the topic under study, such as original articles, systematic reviews, experimental studies, case reports, clinical guidelines, academic reference works, and regulatory documents.

Results and Discussion: The results discussed, although not specific to vitiligo, suggest promising directions for future clinical investigations.

Research Implications: Its theoretical and practical implications encourage further clinical studies and the use of evidence-based natural therapies.

Originality/Value: The relevance of this study lies in its potential to expand accessible and integrative therapeutic options in the dermatological care of vitiligo.

Keywords: Vitiligo, Sunflower Oil, *Helianthus Annuus*, Complementary Therapies, Antioxidant.

ÓLEO DE GIRASSOL E VITILIGO: PLAUSIBILIDADE TERAPÊUTICA BASEADA EM PROPRIEDADES ANTIOXIDANTES E ANTI-INFLAMATÓRIAS

RESUMO

Objetivo: Analisar, sob uma perspectiva teórica, a plausibilidade do uso tópico do óleo de girassol como adjuvante no manejo do vitiligo, com base nas suas propriedades antioxidantes, anti-inflamatórias e emolientes já descritas em estudos voltados a outras dermatoses inflamatórias crônicas.

Referencial Teórico: O estudo fundamenta-se na farmacobotânica do *Helianthus annuus L.*, cujo óleo é obtido por prensagem a frio de seus aquênios, é rico em compostos bioativos como ácidos graxos insaturados, vitamina E e fitoesteróis, que conferem propriedades antioxidantes, anti-inflamatórias e emolientes. Esses atributos tornam o óleo promissor para uso tópico, especialmente em condições dermatológicas como o vitiligo. A atuação do óleo sobre a pele relaciona-se à sua capacidade de restaurar a integridade da barreira epidérmica, reduzir a inflamação

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e favorecer a hidratação, efeitos diretamente vinculados à estrutura histológica da pele e à fisiopatologia das desordens cutâneas.

Método: Revisão narrativa da literatura, integrando diferentes tipos de publicações relevantes ao tema em estudo, como artigos originais, revisões sistemáticas, estudos experimentais, relatos de caso, diretrizes clínicas, obras acadêmicas de referência e documentos normativos.

Resultados e Discussão: Os resultados discutidos, embora não específicos para o vitiligo, sugerem caminhos promissores para futuras investigações clínicas.

Implicações da Pesquisa: As implicações teóricas e práticas da pesquisa incentivam novos estudos clínicos e o uso de terapias naturais baseadas em evidências.

Originalidade/Valor: A relevância deste estudo está no potencial de ampliar opções terapêuticas acessíveis e integrativas no cuidado dermatológico do vitiligo.

Palavras-chave: Vitiligo, Óleo de Girassol, *Helianthus Annuus*, Terapias Complementares, Antioxidante.

ACEITE DE GIRASOL Y VITILIGO: PLAUSIBILIDAD TERAPÉUTICA BASADA EN PROPIEDADES ANTIOXIDANTES Y ANTIINFLAMATORIAS

RESUMEN

Objetivo: Analizar, desde una perspectiva teórica, la plausibilidad del uso tópico del aceite de girasol como adyuvante en el manejo del vitiligo, basándose en sus propiedades antioxidantes, antiinflamatorias y emolientes ya descritas en estudios enfocados en otras dermatosis inflamatorias crónicas.

Marco Teórico: El estudio se fundamenta en la farmacobotánica de *Helianthus annuus* L., cuyo aceite se obtiene mediante prensado en frío de sus aquenios. Es rico en compuestos bioactivos como ácidos grasos insaturados, vitamina E y fitoesteroides, que le confieren propiedades antioxidantes, antiinflamatorias y emolientes. Estos atributos hacen que el aceite sea una opción prometedora para uso tópico, especialmente en afecciones dermatológicas como el vitiligo. La acción del aceite sobre la piel se relaciona con su capacidad para restaurar la integridad de la barrera epidérmica, reducir la inflamación y favorecer la hidratación, efectos directamente vinculados a la estructura histológica de la piel y a la fisiopatología de los trastornos cutáneos.

Método: Revisión narrativa de la literatura, integrando diferentes tipos de publicaciones relevantes para el tema en estudio, como artículos originales, revisiones sistemáticas, estudios experimentales, reportes de casos, guías clínicas, obras académicas de referencia y documentos normativos.

Resultados y Discusión: Los resultados discutidos, aunque no específicos para el vitiligo, sugieren direcciones prometedoras para futuras investigaciones clínicas.

Implicaciones de la investigación: Sus implicaciones teóricas y prácticas fomentan la realización de más estudios clínicos y el uso de terapias naturales basadas en evidencia.

Originalidad/Valor: La relevancia de este estudio radica en su potencial para ampliar las opciones terapéuticas accesibles e integradoras en el cuidado dermatológico del vitiligo.

Palabras clave: Vitiligo, Aceite de Girasol, *Helianthus Annuus*, Terapias Complementarias, Antioxidante.

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1 INTRODUCTION

Vitiligo is a chronic and non-contagious dermatological condition that affects 0.5-2% of the global population, with a similar prevalence among men and women. The disease can appear at any age, but most cases begin before the age of 30, being particularly common in childhood or adolescence (Han et al., 2020). There is no significant difference in prevalence between ethnic or racial groups, although the psychosocial impact may be more pronounced in darker-skinned populations due to the greater contrast of the lesions. The most common form of the disease is non-segmental (generalised) vitiligo, representing about 80% of cases, while segmental vitiligo occurs more frequently in children and tends to stabilise over time (Hu & Wang, 2023).

It is defined as an autoimmune disease in which the immune system attacks and destroys melanocytes—cells responsible for producing melanin, the pigment that gives skin, hair, and eyes colour. This destruction leads to the appearance of depigmented spots on the skin, which can vary in size and location, affecting both exposed and covered areas of the body. Although the etiology of vitiligo is not yet fully elucidated, it is believed that genetic, environmental and neuroimmunological factors are involved in its manifestation. In addition, vitiligo is often associated with other autoimmune diseases, such as thyroid disorders, type 1 diabetes mellitus and systemic lupus erythematosus (Das D. et al., 2019). The definition of vitiligo as an autoimmune disease reinforces the importance of therapeutic approaches that consider not only skin repigmentation, but also inflammation control and protection of remaining melanocytes, in addition to psychological support to the patient (Yen & Chi, 2019).

Although vitiligo does not cause physical pain or direct risk to life, it can cause significant psychosocial disorders in affected individuals. The visibility of injuries, especially in exposed areas such as face, hands and arms, often leads to social stigmatisation, embarrassment and discrimination, affecting patients' self-esteem and body identity (AlOtaibi et al., 2021). Many report feelings of shame, isolation, anxiety and depression, especially when the diagnosis occurs in childhood or adolescence, critical periods for the development of self-image. Negative perception of appearance may interfere with interpersonal relationships, professional opportunities, and even treatment adherence. Therefore, the management of vitiligo should be integral, involving clinical and dermatological interventions, as well as psychological support and reception, in order to promote the emotional well-being and quality of life of people living with the disease (Salama et al., 2023).

In this context, there is a growing interest in the use of complementary and natural



therapies in dermatological care, especially among patients seeking less invasive alternatives, with lower risk of side effects. Products of plant origin, such as essential oils and botanical extracts, have been gaining ground for their antioxidant, anti-inflammatory and immunomodulatory properties, which may be useful in the protection and recovery of melanocytic function (Białczyk et al., 2023; Tomas et al., 2025). In the case of vitiligo, although there is a lack of robust evidence for many of these approaches, there are reports and initial investigations that suggest benefits in its adjuvant use (Leite et al., 2022A). Among them, sunflower oil stands out, whose bioactive components arouse interest for its potential to assist in the regeneration of the skin barrier and in the reduction of oxidative stress, factors relevant in the pathophysiology of the disease (Lužaić et al., 2023). Careful integration of these therapies into the care plan, coupled with medical follow-up, can offer a more humanised and patient-centred approach (Gianfaldoni et al., 2018; Pang et al., 2021).

In this scenario, the present article aims to analyse, from a theoretical perspective, the plausibility of the topical use of sunflower oil as an adjuvant in the management of vitiligo, based on its antioxidant, anti-inflammatory and emollient properties already described in studies aimed at other chronic inflammatory dermatoses. By gathering pre-clinical evidence and empirical data for use in similar dermatological conditions, we seek to provide a conceptual basis for the formulation of hypotheses and the future conduct of clinical trials aimed at the population with vitiligo. Thus, the article aims to present an accessible and reasoned synthesis, which may interest both the scientific community and health professionals and patients living with this condition.

2 THEORETICAL FRAMEWORK

The *Helianthus annuus L.*, popularly known as sunflower, is an annual plant of the Asteraceae family, native to North America. It has erect stems, alternate leaves, and terminal inflorescences called chapters. One of its most striking morphological characteristics is heliotropism in its young phase, a movement that optimises the capture of sunlight for photosynthesis. Due to its adaptability to various types of soil and drought resistance, sunflower is widely grown in tropical and subtropical regions, standing out for its ornamental, nutritional, medicinal and economic value (Adeleke & Babalola, 2020).

The part of the plant used for oil extraction is achene (dried fruit, commonly confused with the seed), rich in lipids, especially unsaturated fatty acids such as linoleic (omega-6) and oleic (omega-9), in addition to natural antioxidants such as vitamin E. The extraction can be



done by mechanical pressing (cold or hot) or by solvent extraction, as in the Soxhlet method. The choice of the method directly influences the concentration and stability of bioactive compounds (Thomaz et al., 2012). For small producers, continuous mechanical pressing is an efficient, economical and sustainable alternative. Factors such as grain moisture (ideal between 8-8.5%) and processing temperature (between 47.8 and 60 °C) are important factors to be considered to optimise crude oil yield (Pighinelli et al., 2009).

Sunflower oil has a unique phytochemical composition, especially tocopherols, phytosterols, phenolic compounds and unsaturated fatty acids. These components give the oil antioxidant, anti-inflammatory, healing and emollient properties, which make it useful in the food, cosmetic and pharmaceutical industries (Leite et al., 2022B). Cold pressing preserves bioactive compounds sensitive to heat, resulting in a natural product of high quality and therapeutic potential, especially in topical applications (Pighinelli et al., 2009). This biochemical richness finds practical support in the anatomical structure of the skin, an organ that acts as a protective barrier and participates in fundamental metabolic and sensory functions (Farhan, 2024).

The skin is the largest organ of the human body, formed by three main layers: epidermis, dermis and hypodermis. The epidermis is avascular, composed of keratinocytes arranged in five strata (basal, spiny, granulous, lucid and corneal), and the basal stratum is the germinal layer responsible for cell renewal. The dermis, located below the epidermis, is formed by connective tissue rich in collagen and elastin, containing vessels, nerve endings, and glands. On the other hand, hypodermis, composed predominantly of adipose tissue, acts as thermal insulator and energy reserve. The integrity of these layers guarantees functions such as protection, thermoregulation, sensory perception and metabolism (Lotfollahi, 2024).

The topical application of sunflower oil acts directly on the structure and function of the skin (Leite et al., 2022B). Its fatty acids interact with the lipids of the stratum corneum, favouring moisture retention, the integrity of the epidermal barrier and the modulation of local inflammation. These effects are particularly relevant in the face of skin ageing processes or diseases such as vitiligo, in which there is dysfunction in melanocyte activity, loss of cell cohesion and decreased regeneration capacity (Farhan, 2024). By restoring lipid balance and offering antioxidant protection, sunflower oil can contribute to the recovery of skin homeostasis and to the care of inflammatory and depigmenting dermatological disorders (Paula et al., 2022).



3 METHODOLOGY

This is a narrative review of the literature, adopted for its methodological flexibility and for allowing the integration of different types of publications relevant to the subject under study, such as original articles, systematic reviews, experimental studies, case reports, clinical guidelines, academic reference works and normative documents. In addition, Brazilian public policies related to regulation, health security and therapeutic use of vegetable oils were consulted, with emphasis on those issued by organs such as the National Health Surveillance Agency (ANVISA). This approach aims to provide a contextualised theoretical basis to discuss the plausibility of the use of sunflower oil as an adjuvant in the management of vitiligo. Because it is a narrative review based on studies of other inflammatory dermatological conditions, the results do not allow direct generalisations to vitiligo, but offer conceptual foundations for the development of assumptions.

The search was conducted between January and June 2025. The screening and analysis of the material were conducted by two researchers independently, in two stages: reading the titles and abstracts, followed by full reading of the selected texts. Inclusion criteria involved relevance to the objectives of the study, methodological clarity and the potential for theoretical contribution to the discussion. As this is a narrative review, standardised tools for assessing the quality of evidence were not applied, but we sought to ensure thematic diversity and conceptual coherence between the sources.

The results are organised in the following thematic axes: (i) oxidative stress and destruction of melanocytes in vitiligo; and (ii) composition and properties of sunflower oil.

4 RESULTSS AND DISCUSSÕES

4.1 OXIDATIVE STRESS AND MELANOCYTE DESTRUCTION IN VITILIGO

One of the main etiopathogenic mechanisms involved in the destruction of melanocytes in vitiligo is oxidative stress, which results from excessive accumulation of reactive oxygen species (ROS) in the epidermis (Perez-Bootello et al., 2023). Recent studies show that individuals with vitiligo have a reduced skin antioxidant capacity, which contributes to the imbalance between the production and neutralisation of free radicals. This condition leads to cell damage, alters the integrity of the melanocyte membrane and triggers apoptosis, aggravating depigmented skin lesions (Mota et al., 2025).



The research conducted by Xuan et al. (2022) reinforces this association by reviewing the evidence that relates oxidative stress as a central factor in the pathogenesis of vitiligo. The authors highlight that in patients with the disease, there is an overexpression of ROS-generating enzymes, such as nicotinamide adenine dinucleotide phosphate reduced oxidase (NADPH), in addition to a reduction in the activity of endogenous antioxidant enzymes, such as catalase and superoxide dismutase. This imbalance favours the pro-oxidant environment in the melanoepidermal unit, making melanocytes more susceptible to immune system aggression and structural damage. Oxidative stress can also be triggered by associated environmental factors (such as trauma, solar radiation, screen use, infection and exposure to chemicals) (Neto et al., 2021; Granato, Lima & Oliveira, 2023; Marchioro et al., 2025).

Given this situation, the use of topical antioxidant agents has been suggested as a coadjuvant strategy to reduce the oxidative load on melanocytes, preventing the recruitment of destructive immune cells and minimising apoptosis processes, which theoretically would contribute to a more stable skin environment and less prone to the progression of depigmented spots (Pang et al., 2021). In addition, topical antioxidants can preserve the remaining melanocytes and favour the repigmentation of lesions (Perez-Bootello et al., 2023). Xuan et al. (2022) highlight the therapeutic potential of natural compounds rich in antioxidants, such as vitamin E, polyunsaturated fatty acids and flavonoids, for their ability to neutralise free radicals, modulate inflammation and protect skin cell structures.

However, it is important to note that research reinforces that the destruction of melanocytes also involves autoimmune mechanisms mediated by cytotoxic T cells (CD8⁺ T cells) and release of inflammatory cytokines such as Interferon gamma (IFN- γ) and tumour necrosis factor alpha (TNF- α). Therefore, any substance that acts by modulating inflammation and reducing the exacerbated cutaneous immune response can be an adjunct in the complementary clinical treatment of vitiligo (Di Bartolomeo et al., 2023).

The Brazilian study by Pereira et al. (2021) showed that ozonated sunflower oil favoured tissue repair in venom-induced necrotic wounds in rats, with significant reduction of pain, necrosis, crusts and inflammatory infiltration. This experimental evidence, even in an animal model, offers argumentative support to defend the biological plausibility of topical sunflower oil use in inflammatory and autoimmune dermatoses, such as vitiligo. Both the necrotic lesions induced by snakebite envenomation and the depigmented areas observed in vitiligo share the presence of a significant local inflammatory process (Sadeghi et al., 2021; Hu & Wang., 2023). In the case of wounds caused by snake venom, an acute and intense inflammatory response is observed, mediated by proteolytic toxins and phospholipases that trigger the massive release of



ROS. This exacerbated oxidative stress contributes directly to tissue necrosis, aggravating cell damage and hindering skin regeneration (Pereira et al., 2021). Based on this pathophysiological parallelism, it is relevant to comment on the bioactive properties of sunflower oil and its possible role in the mechanisms involved in skin regeneration and in the control of oxidative stress.

4.2 COMPOSITION AND PROPERTIES OF SUNFLOWER OIL

The use of oils has ancient roots and is related to the history of human therapeutic and cultural practices. Initially employed in rituals and traditional medicine by means of the so-called essential oils, these natural compounds played symbolic and therapeutic roles in different ancient civilisations. Records indicate that the indigenous people of Mexico had already cultivated and used sunflower oil for more than 4,600 years, while in Ancient Egypt the oils were applied in massages, embalming procedures and as a form of skin protection. Abstract: The food use of sunflower oil began to be documented in 1830 and, from the 1970s, its popularisation expanded worldwide (Kynes, 2013). In the Brazilian context, scientific investigations on essential oils began in 1847, initially focused on composition and yield analysis (Bizzo et al., 2009). Until 2013, Brazil was recognised as one of the main global producers of these oils, which are currently used in the cosmetics, perfumery, food and medicine industries (Bizzo & Rezende, 2022).

According to Lispring (2021), oils such as sunflower, almonds, olive, rosehip and jojoba oils are highlighted for their beneficial effects in the management of dermatoses such as atopic dermatitis, psoriasis, eczema and superficial burns. These effects are attributed to the ability of these oils to reduce transepidermal water loss, act as physical barriers against environmental irritants and modulate local inflammatory processes through the inhibition of proinflammatory cytokines. This action contributes directly to the reduction of symptoms such as itching, burning and scaling, in addition to favouring wound healing (Perez-Bootello et al., 2023).

Among the vegetable oils with traditional use and increasing scientific application, sunflower oil stands out. Its chemical composition makes it especially interesting for dermatological applications (Farhan, 2024). In addition to unsaturated fatty acids and vitamin E (tocopherols) - compounds with recognised antioxidant action, capable of neutralising free radicals and reducing cell damage induced by oxidative stress, which comprises one of the main mechanisms involved in the destruction of melanocytes in vitiligo -, another relevant component of sunflower oil are phytosterols, such as beta-sitosterol, which have anti-



inflammatory and immunomodulatory properties. These compounds have a chemical structure similar to that of cholesterol, but, unlike cholesterol, they do not accumulate in the body. Instead, they exert important biological functions, especially in modulating the immune system and maintaining the integrity of cell membranes (Kassab et al., 2023).

In the context of inflammatory skin diseases, these compounds act by inhibiting the production of pro-inflammatory cytokines, such as interleukin-1 (IL-1), TNF- α and interleukin-6 (IL-6), by suppressing the signalling pathway of nuclear factor kappa B (NF- κ B), one of the main regulators of the inflammatory response. In addition, phytosterols reduce the activation of immune cells such as macrophages and cytotoxic T lymphocytes, which contributes to limiting the perpetuation of autoimmune damage against melanocytes. This immunomodulatory action favours the rebalancing of the epidermal microenvironment, restoring skin homeostasis and strengthening the skin barrier, which can create more favourable conditions for cell regeneration (Marchioro et al, 2022). The description of the nutrients of sunflower oil in its liquid topical presentation is in Figure 1.

In topical formulations, sunflower oil also exerts emollient action, softening the skin, relieving dryness, and improving the texture of affected areas—features that are especially useful in managing chronic dermatoses. Preclinical studies and recent reviews have suggested that the antioxidant and regenerative effects of sunflower oil may be beneficial in dermatological conditions such as atopic dermatitis, psoriasis and superficial burns. In addition to its physiological benefits, sunflower oil is considered safe, stable and well tolerated, with a low risk of allergic reactions, which makes it a frequent excipient in dermatological creams, lotions and ointments. Its vegetal nature and ease of obtaining also favour its inclusion in integrative care practices, aligned with the trends of natural and accessible therapies (Leite et al., 2022A).

**Figure 1***Nutritional and bioactive composition of liquid topical sunflower oil*

CATEGORY	COMPOSITION	PERCENTAGE (%) OF TOTAL LIPID FRACTION OF OIL
ESSENTIAL FATTY ACIDS	LINOLEIC ACID (OMEGA-6)	55.0
ESSENTIAL FATTY ACIDS	OLEIC ACID (OMEGA-9)	30.0
ESSENTIAL FATTY ACIDS	PALMITIC ACID	6.0
ESSENTIAL FATTY ACIDS	STEARIC ACID	4.0
CATEGORY	COMPOSITION	RELATIVE TO TOTAL OIL WEIGHT
VITAMINS	VITAMIN E (ALPHA-TOCOPHEROL)	0.05 (40–70 mg PER 100 g OF OIL)
VITAMINS	VITAMIN K	0.002 (~5–7 µg PER 100 g (TRACE))
PHYTOCHEMICALS AND BIOACTIVE COMPOUNDS	PHYTOSTEROLS (BETA-SITOSTEROL)	0.5 (~300–450 mg PER 100 g)
PHYTOCHEMICALS AND BIOACTIVE COMPOUNDS	SKUALENE	0.1 (~10–30 mg PER 100 g)
PHYTOCHEMICALS AND BIOACTIVE COMPOUNDS	TOCOPHEROLS	0.05 (~10–50 mg PER 100 g)
PHYTOCHEMICALS AND BIOACTIVE COMPOUNDS	PHENOLIC COMPOUNDS	0.03 (~10–50 mg PER 100 g)
CATEGORY	COMPOSITION	TRACES – IN µg/g
MINERALS AND TRACE ELEMENTS	ZINC	0.001 (~1.5–3.0)
MINERALS AND TRACE ELEMENTS	MAGNESIUM	0.001 (~1.0–2.5)
MINERALS AND TRACE ELEMENTS	SELENIUM	0.0005 (~0.2–0.5)
MINERALS AND TRACE ELEMENTS	IRON	0.0005 (~1.0–3.5)

Source: Gotor & Rhazi, 2016; Lužaić et al., 2023.

However, for these benefits to be fully exploited, it is essential to pay attention to the thermo-oxidative stability of sunflower oil. Exposure to light, excessive heat or the addition of other substances can compromise their bioactive properties, such as the antioxidant activity of tocopherols and the integrity of essential fatty acids. Thus, detailed knowledge of its composition and adequate storage are indispensable conditions to preserve its therapeutic efficacy in topical formulations (Adeleke & Babalola, 2020).

Sunflower oil has several therapeutic forms, being used in the medical - dermatological and cosmetic area. In the refined form for topical use, it is found in bottles of different volumes and applied directly to the skin. Another form is ozonated sunflower oil, available in jars or ointments, with antimicrobial and healing properties, especially indicated in the treatment of infected or chronic wounds, such as pressure ulcers. In oral presentations, sunflower oil can be found in capsules used for essential fatty acid supplementation and mild systemic anti-



inflammatory effects. In addition, it composes the formulation of creams, lotions, shampoos and other cosmetics (Borges et al., 2024).

It is also important to note that many of these products, especially dermatological lotions containing sunflower oil, follow specific regulatory criteria. According to the definition of the National Health Surveillance Agency (ANVISA), oily lotions correspond to liquid, aqueous or hydroalcoholic formulations, with variable viscosity, intended for topical application. These preparations may take the form of solutions, emulsions or suspensions incorporating one or more active principles or adjuvant substances. Among the components frequently present in these lotions, essential fatty acids stand out, widely used in formulations aimed at skin care and wound healing (ANVISA, 2012).

In view of this profile, sunflower oil presents itself as a promising substance for the complementary treatment of vitiligo. The valorisation of topical antioxidant agents, such as sunflower oil derivatives, aligns with the search for less invasive and more accessible interventions, capable of supporting the well-being and self-esteem of affected people (Leite, 2022A). However, it is necessary to emphasise that the use of this resource should be considered only as an adjunct, not replacing established therapies such as tacrolimus, pimecrolimus, topical corticosteroids and phototherapy. To date, there are no clinical trials that validate the effectiveness of sunflower oil specifically in the management of vitiligo, and it is essential that any therapeutic proposal be conducted under prescription and specialised medical monitoring (Dellatore et al., 2020).

5 CONCLUSION

Vitiligo, an autoimmune condition that affects the physical and emotional well-being of patients, demands integrative therapeutic approaches that consider the quality of life of the sick person. In this scenario, sunflower oil stands out as a potential adjuvant, because it is rich in essential fatty acids, vitamin E and compounds with antioxidant and anti-inflammatory properties. Although specific clinical studies on its use in vitiligo are lacking, its effectiveness in other inflammatory dermatoses provides a basis for future investigations. This article reinforces the importance of future empirical research that evaluates the applicability of sunflower oil, promoting a more humanised and safer therapy.



REFERENCES

- Agência Nacional de Vigilância Sanitária. (2012). Formulário nacional da Farmacopeia Brasileira (1ª ed.). Brasília: ANVISA. <https://www.gov.br/anvisa/pt-br>
- Adeleke, B. S., & Babalola, O. O. (2020). Oilseed crop sunflower (*Helianthus annuus*) as a source of food: Nutritional and health benefits. *Food science & nutrition*, 8(9), 4666–4684. <https://doi.org/10.1002/fsn3.1783>
- AlOtaibi, H. M., AlFurayh, N. A., AlNooh, B. M., Aljomah, N. A., & Alqahtani, S. M. (2021). Quality of life assessment among patients suffering from different dermatological diseases. *Saudi medical journal*, 42(11), 1195–1200. <https://doi.org/10.15537/smj.2021.42.11.20210560>
- Ayerdi Gotor, A., & Rhazi, L. (2016). *Effects of refining process on sunflower oil minor components: A review*. OCL, 23(2), D207. <https://doi.org/10.1051/ocl/2016007>
- Białczyk, A., Wehniak, A., Kamińska, B. & Czajkowski, R. (2023). Estresse oxidativo e terapias antioxidantes potenciais no vitiligo: uma revisão narrativa. *Mol Diagn Ther* 27, 723–739. <https://doi.org/10.1007/s40291-023-00672-z>
- Bizzo, H. R., Hovell, A. M. C., & Rezende, C. M. (2009). Óleos essenciais no Brasil: aspectos gerais, desenvolvimento e perspectivas. *Química Nova*, 32(3), 588–594. <https://doi.org/10.1590/S0100-40422009000300005>
- Bizzo, H. R., & Rezende, C. M. (2022). O mercado de óleos essenciais no Brasil e no mundo na última década. *Química Nova*, 45(8), 949–958. <https://doi.org/10.21577/0100-4042.20170889>
- Borges, R. L., Reichert, B. B., Oliveira, T. R. da S. de, Wilges, C. H. de M., Nicola, C. F., & Teichmann, C. E. (2024). O uso do óleo de girassol ozonizado no tratamento de feridas em pequenos animais: Relato de casos. *Pubvet*, 18(05), e1595. <https://ojs.pubvet.com.br/index.php/revista/article/view/3613>
- Das, D., Akhtar, S., Kurra, S., Gupta, S., Sharma, A. (2019). Papel emergente da rede de células imunes em doenças autoimunes de pele: uma atualização sobre pênfigo, vitiligo e psoríase. *Cytokine Growth Factor Rev.* 45:35–44. doi: 10.1016/j.cytogfr.2019.01.001
- Dellatorre, G., Antelo, D.A.P., Redrikow, R.B., Cestari, T.F., Follador, I., Ramos, D.G. & Castro, C.C.S. (2020). Brazilian consensus on the treatment of vitiligo. Brazilian Society of Dermatology. *An Bras Dermatol*;95(S1):70-82.
- Di Bartolomeo, L., Custurone, P., Irrera, N., Borgia, F., Vaccaro, F., Squadrito, F., & Vaccaro, M. (2023). Vitiligo and Mental Health: Natural Compounds' Usefulness. *Antioxidants* (Basel, Switzerland), 12(1), 176. <https://doi.org/10.3390/antiox12010176>
- Farhan, M. (2024). O papel promissor dos polifenóis em doenças de pele. *Molecules*, 29 (4), 865. <https://doi.org/10.3390/molecules29040865>
- Gianfaldoni, S., Tchernev, G., Lotti, J., Wollina, U., Satolli, F., Rovesti, M., França, K., & Lotti, T. (2018). Unconventional Treatments for Vitiligo: Are They (Un) Satisfactory?. *Open*



- access *Macedonian journal of medical sciences*, 6(1), 170–175. <https://doi.org/10.3889/oamjms.2018.038>
- Granato, AP, Lima, CS de A., & de Oliveira, MF (2023). Discussões recentes sobre a importância do filtro solar na prevenção do Câncer de Pele: revisão integrativa. *Revista Brasileira de Revisão de Saúde*, 6 (2), 4686–4697. <https://doi.org/10.34119/bjhrv6n2-019>
- Han, F., Ren, H., Tang, M., Zhu, Y., & Guan, H. (2020). Raciocínio clínico: um homem de 47 anos com ataxia rapidamente progressiva e vitiligo. *Neurologia*. 94:e1664–9. doi: 10.1212/wnl.00000000000009242
- Hu, Z., & Wang, T. (2023). Beyond skin white spots: Vitiligo and associated comorbidities. *Frontiers in medicine*, 10, 1072837. <https://doi.org/10.3389/fmed.2023.1072837>
- Kassab, A., Khalij, Y., Ayed, Y., Dar-Odeh, N., Kokandi, A. A., Denguezli, M., & Youssef, M. (2023). Serum Inflammatory and Oxidative Stress Markers in Patients with Vitiligo. *Journal of clinical medicine*, 12(18), 5861. <https://doi.org/10.3390/jcm12185861>
- Lužaić, T., Kravić, S., Stojanović, Z., Grahovac, N., Jocić, S., Cvejić, S., Pezo, L., & Romanić, R. (2023). *Investigation of oxidative characteristics, fatty acid composition and bioactive compounds content in cold pressed oils of sunflower grown in Serbia and Argentina*. *Heliyon*, 9, e18201. <https://doi.org/10.1016/j.heliyon.2023.e18201>
- Leite, P. M., Alves, S. D. O., & Castilho, R. O. (2022A). *The rationality involved in the popular use of coffee (Coffea sp) and sunflower seed (Helianthus annuus) for the treatment of vitiligo: A case report*. *Explore (NY)*, 18(5), 587–590. <https://doi.org/10.1016/j.explore.2021.05.004>
- Leite, V. V., Costa, K., Freitas, G. J. C., Borges, E. L., Januário, L. H., & Ruas, C. M. (2022B). Tratamento de feridas: efeitos *in vitro* de aplicações farmacoterapêuticas do óleo de girassol (*Helianthus annuus*). *Revista de Enfermagem Referência*, 6(1), e22026. <https://doi.org/10.12707/RVI22026>
- Lotfollahi, Z. (2024). Anatomia, fisiologia e função de todas as camadas da pele e o impacto do envelhecimento na pele. *Wound Practice and Research*, 32(1), 6–10. <https://doi.org/10.33235/wpr.32.1.6-10>
- Mota, A.L.V.L., Mata, A.G.S., Antunes, D.C.B., Tenório, L.M., Apolinário, M.L.S., Nascimento, M.H.L. & Silva, R.C. *Brazilian Journal of Health Review*, Curitiba, v.8, n.1, p.01-11. 0.34119/bjhrv8n5-501
- Neto, A.V.N., Drumond, K. N., Lubiana, A., Silveira, A. L. S. da, Silva, F. A. e, Moreira, G. N., Júnior, M. A. M., Barros, P. P. de, & Oliveira, M. F. de. (2021). Relação entre o uso de telas e o envelhecimento da pele: atualização clínica. *Revista Eletrônica Acervo Saúde*, 13(5), e7410. <https://doi.org/10.25248/reas.e7410.2021>
- Pereira, L. G. (2021). Avaliação do potencial cicatrizante do óleo de girassol ozonizado em modelo experimental de feridas cutâneas provocadas por veneno de Bothrops jararaca [Dissertação de Mestrado, Universidade do Oeste Paulista]. Repositório Institucional da UNOESTE. <http://bdtd.unoeste.br:8080/jspui/handle/jspui/1343>



- Perez-Bootello, J., Cova-Martin, R., Naharro-Rodriguez, J., & Segurado-Miravalles, G. (2023). Vitiligo: Pathogenesis and New and Emerging Treatments. *International journal of molecular sciences*, 24(24), 17306. <https://doi.org/10.3390/ijms242417306>
- Xuan, Y., Yang, Y., Xiang, L., & Zhang, C. (2022). The Role of Oxidative Stress in the Pathogenesis of Vitiligo: A Culprit for Melanocyte Death. *Oxidative medicine and cellular longevity*, 2022, 8498472. <https://doi.org/10.1155/2022/8498472>
- Salama, A. H., Alnemr, L., Khan, A. R., Alfakeer, H., Aleem, Z., & Ali-Alkhateeb, M. (2023). Unveiling the Unseen Struggles: A Comprehensive Review of Vitiligo's Psychological, Social, and Quality of Life Impacts. *Cureus*, 15(9), e45030. <https://doi.org/10.7759/cureus.45030>
- Tomas, M., Günel-Köroğlu, D., Kamiloglu, S., Ozdal, T. & Capanoglu, E. (2025). O estado da arte em antienvhecimento: fitoquímicos à base de plantas para cuidados com a pele. *Immun Ageing* 22, 5. <https://doi.org/10.1186/s12979-025-00498-9>
- Thomaz, G. L., Zagonel, J., Colasante, L. O., & Nogueira, R. R.. (2012). Produção do girassol e teor de óleo nas sementes em diferentes épocas de semeadura no Centro-Sul do Paraná. *Ciência Rural*, 42(2), 203–208. <https://doi.org/10.1590/S0103-84782012005000010>
- Xuan, Y., Yang, Y., Xiang, L., & Zhang, C. (2022). The Role of Oxidative Stress in the Pathogenesis of Vitiligo: A Culprit for Melanocyte Death. *Oxidative medicine and cellular longevity*, 2022, 8498472. <https://doi.org/10.1155/2022/8498472>
- Yen, H. & Chi, C.C. (2019). Associação entre psoríase e vitiligo: uma revisão sistemática e meta-análise. *Am J Clin Dermatol*. 20:31–40. doi: 10.1007/s40257-018-0394-1 cada. Editora ABC.