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Herbals for the Management of Vitiligo: A Review

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ABSTRACT

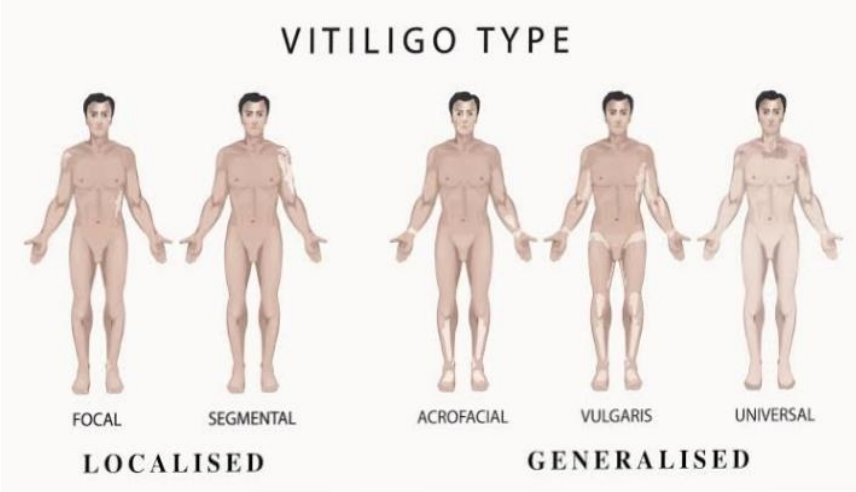
Vitiligo is a complex disorder characterized by an autoimmune response that targets the body's own pigment cells and tissues. The aim of treatment is to restore the skin's colour by rejuvenating healthy melanocytes in the affected areas. Numerous approaches have been developed to treat vitiligo, including the use of steroid creams, PUVA (psoralen and ultraviolet A light), narrow band UVB (ultraviolet B), various surgical techniques, vitamin D analogues, and pseudo catalase. However, these treatments and their procedures can result in unwanted side effects. On the other hand, some herbal and natural remedies modulate the immune system without causing adverse reactions. In this review, we provide an overview of commonly used herbal ingredients for managing vitiligo.

Keywords Vitiligo, Autoimmune response, Natural remedies.

Introduction

Vitiligo, also known as leukoderma, is a condition characterized by the destruction of melanocytes (the cells responsible for producing skin pigment). This leads to the formation of smooth, white patches within areas of normally pigmented skin [1]. Depigmentation primarily occurs on the exposed parts of the body such as the face, neck, and arms. The profound impact of vitiligo often imposes significant psychological distress on affected individuals. While both males and females are equally susceptible to this condition, women tend to be more vocal about and concerned with the cosmetic aspects of vitiligo. As a result, they are more inclined to actively seek treatment options [2].

Types of Vitiligo



Generalized Vitiligo: The most prevalent form of vitiligo, known as "Vitiligo Vulgaris" or generalised vitiligo, is characterized by the widespread and symmetrical distribution of discoloured patches. This type of vitiligo causes depigmentation in various areas of the body, including the face, neck, scalp, and regions surrounding body openings like the mouth and genitals.

Focal Vitiligo: This particular type of vitiligo is commonly observed in children. It is a rare form that is characterized by the involvement of a small area and does not exhibit a specific spreading pattern within a span of 1-2 years. Focal vitiligo refers to the presence of a single, acquired depigmented lesion without the typical segmental distribution, as well as two to three minor acquired lesions located in a non-segmental area, with a maximum size of 5 cm.

Universal Vitiligo: This uncommon variant demonstrates extensive skin involvement, affecting approximately 80% of the body in the course of the disease.

Acrofacial Vitiligo: The progression of this type of vitiligo typically includes the distal regions of the fingers and areas around the mouth and eyes. When the condition is limited to the lips and fingertips, it is referred to as "Lip-tip vitiligo."

Segmental Vitiligo: Segmental vitiligo typically begins at an early age. In this type of vitiligo, the patches are localized to one side of the body or a specific area, such as the hands or face, rather than being widespread throughout the body.

Trichrome Vitiligo: Trichrome vitiligo is characterized by a unique depigmentation pattern. It involves the formation of a three-layered patch, consisting of a central area that is white or colourless, surrounded by a region of lighter pigmentation, and further encompassed by an area of normally coloured skin.

Mixed Vitiligo: This exceptionally uncommon form of segmental vitiligo manifests as a distinct patch on one side of the body, confined to a specific area and bordered by the midline.

Inflammatory Vitiligo: Inflammatory vitiligo is classified as a highly active variant characterized by a pink border surrounding the white depigmented area. Occasionally, scaling may occur in this region, leading to irritation. The pink border is typically subtle and may go unnoticed unless specifically examined for.

Mucosal Vitiligo: Mucosal vitiligo primarily impacts the mucous membranes, particularly those in the mouth and genital areas. It can manifest as a part of vitiligo vulgaris, an extension of perioral acrofacial vitiligo, or as pure mucosal vitiligo. Pure mucosal vitiligo is considered to be a probable variant of this condition.

Ingredients

Flame Vine (Pyrostegia Venusta)

Pyrostegia venusta, found in traditional Brazilian medicine, is utilized for its aerial parts. These parts are prepared as an infusion or decoction and taken orally. The plant is commonly used as a general tonic and to treat various conditions including diarrhoea, vitiligo, cough, bronchitis, flu, cold, and respiratory infections [3,4]. In traditional Brazilian medicine, the aerial parts of Pyrostegia venusta are commonly prepared as infusions or decoctions and taken orally. They are used as a general tonic and to address various health conditions, including diarrhea, vitiligo, cough, and respiratory infections such as bronchitis, flu, and cold[4,5].The aerial parts of Pyrostegia venusta are primarily employed in traditional medicine as a general tonic and for treating conditions such as diarrhea and white patches associated with vitiligo. [5,6,7].

Over the past few decades, extensive screening has been conducted on numerous plant extracts, resulting in the identification of thousands of compounds with potential as agents for skin lightening. [8]. Although numerous plant extracts have been studied for their skin-lightening properties, there is limited research demonstrating plant extracts with hyperpigmentant activity.

Pyrostegia venusta is frequently utilized in traditional medicine as a remedy for patches and vitiligo. However, there is currently no scientific data available to substantiate its efficacy for these purposes. In a previous in vitro study, it was discovered that the hydroalcoholic (HE) extract derived from the leaves of Pyrostegia venusta was capable of stimulating melanin production in the B16F10 cell line, without causing any detrimental effects on cell viability. [9].

Bakuchi (Psoralea Corylifolia)

Bakuchi is a widely utilized ayurvedic remedy for reducing the symptoms of vitiligo. It works gradually and progressively to diminish the visibility of white patches and rejuvenate the skin. [10].

Manjistha (Rubia Cordifolia)

For individuals with vitiligo who are deeply concerned and seeking a long-lasting solution, Manjistha can be a reliable option. This herb possesses potent properties that contribute to the management of various ailments, including vitiligo. It aids in the restoration of normal skin colour and acts as a preventive measure against the progression of the condition. [10].

Neem (Azadirachta Indica)

Neem possesses diverse antioxidant properties that aid in alleviating the symptoms of vitiligo by neutralizing free radicals within the body. By protecting melanocytes from damage caused by free radicals, neem can help prevent the worsening of vitiligo. [10].

Haritaki (Terminalia Chebula)

Haritaki, an ayurvedic medicine frequently employed for treating vitiligo or leucoderma, serves as an antioxidant by eliminating the harmful free radicals responsible for damaging melanocytes. Additionally, it can help prevent depression and anxiety, which are commonly experienced by vitiligo patients. Haritaki is particularly recommended for severe cases of vitiligo and individuals at higher risk of psychological complications should consider using it [10].

Giloe (Tinospora Cordifilia)

Giloe (Tinospora cordifolia) is considered an excellent remedy not only for vitiligo but also for various minor and major health conditions. It is easily accessible in local areas and rural regions. Giloe works by preventing the destruction of melanocytes by immune cells, thereby reducing the symptoms of vitiligo [10].

Khadira (Acacia Catechu)

Many individuals frequently ponder and inquire about the curability of vitiligo in its early stages. The answer is affirmative: with the aid of the herb Khadira, the disease can be cured. Khadira is considered the most effective remedy when vitiligo is in its initial stages. Regular use of this herb has the potential to diminish the white patches on the skin and expedite the healing process. [10].

Muskmelon (Cucumis Melo)

Cucumis Melo belongs to the Cucumis genus within the Cucurbitaceae family. Extract derived from Cucumis melo is abundant in antioxidants, particularly high in superoxide dismutase (SOD) activity. This antioxidant property is believed to play a significant role in preventing the breakdown of melanocytes caused by oxidative stress, which is an initial stage in vitiligo development. Recent preliminary studies have been conducted to assess the effectiveness of a topical formulation containing Cucumis melo superoxide dismutase (SOD) and catalase for treating vitiligo [11,12]. In each study, a

gel preparation was applied to the skin lesions, followed by exposure to natural UV or artificial narrow band UVB irradiation. Although the drug was found to be safe, there was no significant difference in the rate of repigmentation compared to patients treated only with phototherapy. However, more promising results were observed with a different topical formulation that included phenylalanine, Cucumis melo extract, and acetyl cysteine. The combination of this gel with targeted phototherapy using narrow band UVB was deemed safe and effective, resulting in improved repigmentation of the skin lesions [13].

Picrorhiza kurroa

Picrorhiza kurroa is an herbal remedy utilized in Ayurveda for the treatment of vitiligo. Research has indicated that when the root powder of this plant is taken in combination with photochemotherapy, it results in superior repigmentation compared to photochemotherapy alone. The effectiveness of this herb in treating vitiligo may be attributed to its immune-modulating and antioxidant properties. [14].

Khellin

Khellin, a furanochromone naturally derived from the Ammi visnaga plant, has been historically used in herbal medicine for various purposes, dating back to ancient Egyptian times. However, due to side effects associated with khellin, such as liver dysfunction and allergic reactions, safer and more effective analogues have been developed and incorporated into medical practice in recent decades, particularly for the treatment of vitiligo. These analogues, when used in combination with UVA phototherapy, have shown promising results. Although the exact mechanism of action is not fully understood, khellin appears to stimulate the proliferation of melanocytes and melanogenesis[15].

Khellin can be administered through both systemic means, such as oral administration, or topically. The combination of oral Khellin with UVA phototherapy is commonly referred to as KUVA therapy. [16]. The treatment regimen involves the patient orally taking khellin gelatin capsules, followed by UVA irradiation after approximately 2.5 hours. This therapeutic session is typically repeated 2-3 times per week. The treatment is considered to be safe and yields clinical outcomes comparable to PUVA therapy. Unlike psoralens, khellin exhibit lower phototoxicity and DNA mutagenic effects. However, the long-term risk of carcinogenesis still needs to be assessed and determined. [17]. Similar to topical PUVA, khellin can also be applied topically and combined with UVA radiation, known as topical KUVA therapy, or with natural UVR, referred to as sol-KUVA therapy. However, the risk of carcinogenesis from these treatments still needs to be determined [18]. Furthermore, in more recent developments, topical khellin at a concentration of 4% has shown successful results when used in conjunction with monochromatic excimer light at 308 nm [19]. The favourable clinical outcomes, including the rate of repigmentation and safety profile, indicate the potential usefulness of this combination for the treatment of vitiligo.

Polypodium leucotomos

Polypodium leucotomos, also known as "Calaguala," is a tropical fern belonging to the Polypodiaceae family. The extracts derived from this fern are well-known for their antioxidant and photoprotective properties [20]. These extracts derived from Polypodium leucotomos are employed in the treatment of diverse skin conditions, including psoriasis, atopic dermatitis, and other related disorders [21][22]. In recent years, Polypodium leucotomos has been utilized as an adjunctive therapy for vitiligo patients undergoing phototherapy. A noteworthy study highlighted that combining PUVA therapy with oral Polypodium leucotomos resulted in superior repigmentation compared to phototherapy alone. Another study demonstrated similar outcomes when combining nb-UVB therapy with oral Polypodium leucotomos in comparison to single phototherapy [22,23].

Capsaicin

Capsaicin, found in chili peppers from the Capsicum genus, is known for its anti-inflammatory and antioxidant properties. Due to these characteristics, it has been suggested as a potential therapeutic agent for treating vitiligo. A recent experimental study further supported this claim, demonstrating that incubating keratinocytes from the perilesional skin of a vitiligo patient with capsaicin effectively halted cellular damage caused by reactive oxygen species (ROS) [24].

Green Tea Polyphenols

Green tea polyphenols are derived from the leaves of green tea and have been used in medicine since ancient times. These polyphenols exhibit anti-inflammatory, antioxidant, and immunomodulatory properties, primarily attributed to their high content of Epigallocatechin-3-gallate (EGCG) [25]. The medication can be administered via systemic and topical routes [26]. Emerging evidence indicates that Green Tea polyphenols could have potential benefits in the treatment of vitiligo by mitigating oxidative stress within the melanocyte unit [27].

Black Cumin

Black cumin (Nigella sativa) oil is another natural remedy that shows potential in addressing vitiligo. In a study conducted over a six-month period, the application of black cumin oil resulted in improved skin colour and reduced depigmented areas among individuals with vitiligo. The beneficial effects are believed to be attributed to thymoquinone, a compound found in black cumin seeds. Thymoquinone offers protection against oxidative stress and can stimulate the release of acetylcholine, a neurotransmitter that promotes melanin release and skin darkening [28].

Curcumin

Curcumin, a polyphenol derived from the popular spice turmeric (Curcuma longa), is known for its various properties, including antioxidant, anti-proliferative, anti-inflammatory, antiviral, antibacterial, and antifungal effects. Due to these properties, curcumin has been employed in the treatment of various diseases [29]. Due to its antioxidant properties, curcumin has shown promise as a potential therapeutic option for treating vitiligo. In a study, the combination of narrow-band ultraviolet B (NB-UVB) therapy and tetrahydrocurcuminoid cream was investigated to determine if it could produce synergistic therapeutic effects against vitiligo [30].

Conclusion:

On the basis data provided above it is possible to manage vitiligo. It provides an advantage of management of vitiligo without any side effects.

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