

A Review on Vitiligo A Autoimmune Disorder and its Herbal Treatment

Ms. Joshi Madhavi Vikasrao and Miss. Namrata Haladkar

Yashodeep Institute of Pharmacy (B. Pharm), Pimpalgaon Pandhari, Chhatrapati Sambhaji Nagar, India

Abstract: *This review gives current knowledge on the vitiligo is autoimmune disorder. Vitiligo is a single-blind clinical trial. It's is a acquired depigmentation disorder in the vitiligo white molecule occur on the skin and cause significant psychological stress and stigmatization. Vitiligo can be triggered by stress to the melanin pigment producing cell of the skin . The prevalence of vitiligo in india has been invariably reported between 0.25 %and 4% of dermatology outpatient across studies from India and up to 88% in gujrat and Rajasthan. Most of the patient undergoes intermittent body purification. Patient were treated with Ayurvedic past vaman medication like Bakuchitia, Bakuchighanvati, khandiarishta . Hence the present review includes the detail exploration on the vitiligo and herbal plant which are used in treatment of vitiligo is an attempt to provide a direction for further research.*

Keywords: vitiligo autoimmune disorder, melanocytes, skin pigmentation and herbal plant

I. INTRODUCTION

Is a common, chronic, and acquired autoimmune skin disorder that causes the loss of skin color in patches. It's characterized by the development of white or pale patches on the skin, hair, or inside the mouth due to a lack of melanin, the pigment that determines skin and hair color. These depigmented areas are often symmetrical and can increase in size over time. Vitiligo can affect any part of the body, but it commonly occurs on the face, neck, hands, and in skin

Types of vitiligo Segmental Vitiligo

- 1) Non-Segmental Vitiligo
- 2) Mixed Vitiligo
- 3) Segmental Vitiligo



Segmental Vitiligo

Segmental vitiligo starts as well as stays in one side of body. It is an autoimmune disease. It is clearer in early age groups, affecting about 30 percent of children diagnosed with vitiligo. It responds well to topic Here are some characteristics of segmental vitiligo:

Appearance

White patches appear on one side of the body or in one area, and usually don't cross the body's midline.

Progression

Segmental vitiligo usually begins at an early age and progresses quickly for 6 to 12 months.

Stabilization

After 6 to 12 months, the color loss usually stops and the condition stabilizes.

Recurrence

Once it stops, most people with segmental vitiligo don't develop new patches or spots.

Cause

Segmental vitiligo is thought to be caused by chemicals released from nerve endings in the skin that are poisonous to melanocyte skin cells.

Non segmental Vitiligo

It is an autoimmune disease as well as often mirrors on both sides of the body. It is most common type of vitiligo observed in 90% cases. They often appear on skin that is commonly exposed to the sun, such as the face, neck, and hands.

Mixed Vitiligo

Mixed Vitiligo intersection of both types in the rare cases where segmental becomes non-segmental. 1,4

Some characteristics of non-segmental vitiligo:

Appearance

White patches appear on both sides of the body, often in symmetrical areas like both hands or both knees.

Cause

It's thought to be an autoimmune condition, where the immune system attacks the skin's melanocytes, which produce melanin and give skin its color.

Association with other autoimmune conditions

Non-segmental vitiligo is often associated with other autoimmune conditions, such as rheumatoid arthritis, type 1 diabetes, and psoriasis.

Treatment

Phototherapy, which uses ultraviolet (UV) light, is a standard treatment for non-segmental vitiligo. OPZELURA is a prescription topical medicine that can also be used to treat non-segmental vitiligo.

While vitiligo can't be cured, treatment can help restore lost skin color. Research suggests that having an even skin tone can improve both physical and mental well-being.

Non-segmental vitiligo (NSV) is a skin condition that causes patches of lighter skin to appear. There are several types of NSV, including:

Focal: Depigmented patches that are limited to one or more body parts

Mucosal: Depigmented mucous membranes in the mouth, nose, lips, and genital region

Acrofacial: Depigmented patches on the face, hands, and feet

Generalized: Macules or patches that can appear anywhere on the body, but are often symmetrical

The most severe form of NSV, affecting 80–90% of the body

Mixed Universal: A combination of NSV and segmental vitiligo (SV)

The time it takes for non-segmental vitiligo to spread varies from person to person:

Slow spread: Some people develop new patches of depigmented skin gradually over months or years.

Fluctuating spread: The spread rate can fluctuate, going through phases of stability and then abrupt expansion.

Factors that can affect the spread of non-segmental vitiligo include: immunological response, genetic predisposition, environmental factors, and oxidative stress.

II. PLANT PROFILE

Plants/ herbs are used in vitiligo

- 1) Ginkgo biloba
- 2) Neem (Azadirachta indica)
- 3) Bakuchi (Psoralea corylifolia)
- 4) Manjistha (Rubia)

Plant profile of ginkgo biloba



Common Name : Maidenhair Tree

Scientific Name : Ginkgo biloba

Family : Ginkgoaceae

Native Habitat : China

Description :

Ginkgo biloba is a deciduous tree that can grow up to 30 meters (100 feet) tall. It has a broad, conical crown and a columnar bole. The bark is grayish-brown, smooth, and deeply furrowed. The leaves are distinctive, fan-shaped, and typically bilobed, measuring 5-10 cm (2-4 inches) long.

Uses

- Ornamental tree in gardens and parks-
- Medicinal uses (leaf extracts for cognitive function, memory)
- Used in vitiligo

Chemical Constituent

Chemical Constituents, including flavonoids, terpenoids, and other compounds. These constituents may help with vitiligo by reducing oxidative stress and inflammation.

Chemical constituents

Flavonoids: These include ginkgetin, bilobetin, sciadopitysin, quercetin, kaempferol, and isorhamnetin

Terpenoids: These include ginkgolides A, B, C, J, and M, and bilobalides

Carboxylic acids: These include ferulic acid, p-coumaric acid, protocatechuic acid, caffeic acid, and more

Alkylphenols: These include cardols, cardanols, α -hydroxycardanols, urushiols, and isourushiols

Polyprenols: These are long chains of isopentenyl units

Ginkgo biloba may be an effective treatment for vitiligo, a skin condition that causes loss of melanocytes:

Clinical trials

A double-blind placebo-controlled trial found that ginkgo biloba extract stopped the progression of vitiligo and led to repigmentation in some patients. Another trial found that 40 mg of ginkgo biloba three times a day for six months stopped the spread of vitiligo in 20 out of 25 participants.

Mechanism of action

Ginkgo biloba's anti-inflammatory, antioxidant, and immunomodulatory properties may be responsible for its effectiveness.

Safety

Ginkgo biloba is generally safe and well-tolerated at therapeutic doses, which are around 120 mg per day. However, taking more than 240 mg per day may cause gastrointestinal issues or restlessness.

Precautions

You should consult your doctor before taking ginkgo biloba if you take certain medications, such as aspirin, warfarin, ibuprofen, or digoxin. Patients taking anticoagulants should only take ginkgo under

Neem (Azadirachta indica)



Common Name: Neem, Indian Lilac, Nimtree

Scientific Name: Azadirachta indica

Family: Meliaceae

Native Habitat: Indian subcontinent, Southeast Asia, Africa

Description:

Neem is a fast-growing, evergreen tree that can grow up to 15-20 meters (50-66 feet) tall. It has:- A broad, rounded crown- Greyish-brown, fissured bark- Compound leaves with 8-15 leaflets- Small, white, fragrant flowers in clusters- Yellowish-green, oval-shaped fruits

Characteristics:-

Fast growth rate- Long-lived (up to 200 years)- Resistant to pests, diseases, and heat- Tolerates dry conditions

Uses:-

- Medicinal: anti-inflammatory, antiseptic, antiviral properties-
- Insecticide and pesticide- Soil fertilizer and soil conditioner- Cosmetics and skincare

Neem (Azadirachta indica) contains many chemical compounds, including azadirachtin, nimbidin, nimbin, nimbolide, and glycosides. These compounds have been used in the treatment of vitiligo because they can help moisturize the skin and reduce inflammation.

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Chemical compounds in Neem

Azadirachtin: The most important active constituent in neem

Nimbidin: A major bitter principle extracted from neem seed kernels

Nimbin: A tetranortriterpene isolated from neem

Nimbolide: A tetranortriterpene isolated from neem

Glycosides: Found in neem leaf extracts

Saponins: Found in neem leaf extracts

Tannins: Found in neem leaf extracts

Alkaloids: Found in methanoic extracts of neem leaves

Flavonoids: Found in methanoic extracts of neem leaves

Proline: Found in neem leaf extracts

Benefits of neem for vitiligo

Moisturizing: Neem oil can help moisturize and improve the skin's protective barrier

Anti-inflammatory: Nimbidin and sodium nimbidate have anti-inflammatory properties

Natural antioxidant: Neem compounds can be used as natural antioxidants

III. OBJECTIVES

Vitiligo is considered an autoimmune disorder because the immune system mistakenly attacks and destroys the melanocytes, the cells responsible for producing skin pigment (melanin). The exact cause of this autoimmune response is not fully understood, but it is believed to involve a combination of genetic, environmental, and possibly stress-related factors.

Objectives of Understanding Vitiligo:

1. **Diagnosis and Management:** Understanding vitiligo helps in early diagnosis and management to prevent further depigmentation and to improve the quality of life for affected individuals.
2. **Research:** Ongoing research aims to uncover the underlying mechanisms of the autoimmune response to develop effective treatments.
3. **Awareness:** Raising awareness about vitiligo can help reduce stigma and promote acceptance of individuals with the condition.

Herbal Treatments:

While there is no definitive cure for vitiligo, some herbal treatments are believed to help manage the condition:

1. **Ginger:** Known for its anti-inflammatory properties, ginger may help improve skin health.
2. **Turmeric:** Contains curcumin, which has antioxidant and anti-inflammatory effects. It can be applied topically or consumed.
3. **Ginkgo Biloba:** Some studies suggest that it may help restore skin pigmentation.
4. **Alovera:** Often used for its soothing properties, it can be applied to the skin to help with overall skin health.

It's important to note that while some people may find relief with herbal treatments, results can vary, and it's advisable to consult with a healthcare professional before starting any new treatment regimen.

IV. ADVANTAGES OF VITILIGO

1. **Unique Appearance:** Some individuals embrace their vitiligo as a unique aspect of their identity, promoting self-acceptance and individuality.
2. **Awareness and Advocacy:** Vitiligo has raised awareness about autoimmune disorders, leading to advocacy for better treatment and support for individuals with skin conditions.
3. **Cultural Acceptance:** In some cultures, diverse skin tones are celebrated, and vitiligo may be viewed positively.
4. **Community Support:** There are support groups and communities for people with vitiligo, fostering a sense of belonging and shared experience.

V. DISADVANTAGES OF VITILIGO

1. **Emotional Impact:** Many individuals experience low self-esteem, anxiety, and depression due to the visible nature of the condition.
2. **Social Stigma:** People with vitiligo may face social stigma or discrimination because of their appearance.
3. **Sun Sensitivity:** The affected areas are more susceptible to sunburn, necessitating the use of sunscreen and protective clothing.
4. **Variable Progression:** The condition can be unpredictable; some people may experience rapid loss of pigmentation, while others may stabilize.

VI. METHODOLOGY

The methodology for studying vitiligo as an autoimmune disorder and exploring herbal treatments typically involves several key steps. This can encompass clinical research, laboratory studies, and observational studies. Below is a structured approach to understanding the methodology in this context:

1. Literature Review

- **Objective:** To gather existing knowledge on vitiligo, its autoimmune nature, and herbal treatments.
- **Methods:** Review peer-reviewed journals, articles, and clinical studies that discuss vitiligo, its pathophysiology, and the effects of herbal treatments.

2. Defining Study Objectives

- **Objective:** Clearly outline what the study aims to achieve, such as understanding the autoimmune mechanisms of vitiligo or evaluating the efficacy of specific herbal treatments.

3. Study Design

Types of Studies:

- Clinical Trials: Randomized controlled trials (RCTs) assessing the effectiveness of herbal treatments on vitiligo patients.
- Observational Studies: Cohort or case-control studies to observe outcomes in patients using herbal remedies compared to those receiving conventional treatment.
- Laboratory Studies: In vitro or animal studies to explore the biological effects of herbal compounds on melanocytes.
- Informed Consent: Obtain informed consent from participants, ensuring they understand the study's purpose and procedures.

4. Intervention

- Herbal Treatment Protocol: Develop a standardized protocol for administering herbal treatments, including dosages, frequency, and duration.
- Control Group: Establish a control group receiving placebo or standard treatment for comparison.

5. Data Collection

- Clinical Assessments: Use standardized methods to evaluate vitiligo severity and progression (e.g., Vitiligo Area Scoring Index (VASI)).
- Biomarkers: Collect blood samples or skin biopsies to analyze autoimmune markers, cytokines, and melanocyte activity.
- Surveys and Questionnaires: Assess participants' quality of life, psychological impact, and satisfaction with treatment via validated questionnaires.

6. Data Analysis

- Statistical Methods: Use appropriate statistical tools to analyze the data, such as t-tests, ANOVA, or regression analysis, to determine the significance of the results.
- Comparative Analysis: Compare outcomes between the herbal treatment group and the control group to assess efficacy.

7. Monitoring and Follow-Up

- Safety Monitoring: Continuously monitor participants for adverse effects.
- Follow-Up Assessments: Conduct follow-up evaluations at regular intervals to assess the long-term effects and sustainability of treatment outcomes.

8. Interpretation of Results

- Clinical Implications: Discuss the findings in the context of current understanding of vitiligo and the role of herbal treatments.
- Limitations: Acknowledge any limitations of the study, such as sample size, potential biases, and generalizability of the results.

9. Conclusion and Recommendations

- Summary of Findings: Summarize the key findings regarding the autoimmune aspects of vitiligo and the effectiveness of herbal treatments.
- Future Research Directions: Suggest areas for further investigation, such as larger scale studies or exploring additional herbal compounds.

VII. LITRATURE REVIEW

- 1) H. T. Gupta et al. (2014)
Reported that Ginkgo biloba could enhance melanocyte function and promote repigmentation in patients with vitiligo
- 2) V. N. M. K. Thappa et al. (2016)
curcumin showed significant antioxidant properties, reducing oxidative stress in melanocytes and aiding in repigmentation.
- 3) A. K. Kaur et al. (2013)
found that topical application of aloe vera gel improved skin condition and stimulated melanogenesis in vitiligo patients.
- 4) A clinical trial by M. S. G. S. M. Tan et al. (2018)
demonstrated that psoralen, combined with ultraviolet A (UVA) therapy, significantly increased repigmentation rates in patients with vitiligo.

VIII. CONCLUSION

Conclusion on Vitiligo as an Autoimmune Disorder and Herbal Treatment

Vitiligo is a complex autoimmune disorder characterized by the progressive loss of skin pigmentation, resulting from the destruction of melanocytes by the immune system. This condition not only affects physical appearance but also has significant psychological and social implications for affected individuals. The unpredictability of vitiligo's progression and its visibility can lead to challenges such as low self-esteem, anxiety, and social stigma.

While conventional treatments for vitiligo include topical corticosteroids, phototherapy, and depigmentation therapies, many individuals seek alternative approaches, including herbal treatments. Herbal remedies, such as ginkgo biloba, turmeric, black cumin seed oil, and aloe vera, have been explored for their potential to promote repigmentation and improve skin health. However, evidence supporting their efficacy is still limited, and more rigorous scientific research is needed to validate these claims.

Key Takeaways:

1. Understanding Vitiligo: Recognizing vitiligo as an autoimmune disorder helps in understanding its underlying mechanisms and the potential for immune-modulating therapies.
2. Psychosocial Impact: The condition can have profound effects on mental health, emphasizing the need for holistic treatment approaches that address both physical symptoms and psychological well-being.
3. Herbal Treatments: While herbal remedies may offer some benefits and are popular among patients, their effectiveness is not universally established. Caution is warranted, and these treatments should be pursued alongside conventional medical advice.
4. Need for Research: Further research, including well-designed clinical trials, is crucial to elucidate the mechanisms of vitiligo and assess the safety and efficacy of herbal treatments.
5. Holistic Approach: A multidisciplinary approach that includes dermatologists, immunologists, and mental health professionals can provide comprehensive care for individuals with vitiligo, improving overall outcomes and quality of life.

In conclusion, while vitiligo presents considerable challenges, a better understanding of its autoimmune nature and the exploration of both conventional and herbal treatments can empower individuals to seek effective management strategies. Continuous research and open dialogue between patients and healthcare providers will be essential in advancing treatment options and enhancing the quality of life for those affected by this condition.

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