

Understanding Vitiligo – a Skin Condition Beyond Color

Bharati S. Chavan^{1,*}, Sunila A. Patil², Sunil P. Pawar³

Abstract

Patches of skin that have lost their pigmentation are the hallmark of vitiligo, a chronic skin disorder. The afflicted skin patches turn white and typically have strong edges. Additionally, the skin's hair may turn white. There may also be issues with the inside of the mouth and nose. The rate at which skin conditions cause color loss is uncertain. When the cells that make melanin cease to function or die, vitiligo results. People of all skin types can get vitiligo, but those with darker complexion may notice it more. A family history of the illness or other autoimmune illnesses is one risk factor. This review focuses on how natural products made from plants can aid with vitiligo. Findings 449 men and 496 women (m:f 1:1.1) with vitiligo ranging from 1 week–64 years (mean 5.1 years) and ages 2–83 years (mean 24.4 years) were included. Of the patients, 248 (26.2%) were children aged ≤ 12 years, and 478 (50.6%) were adults aged ≤ 20 years. The majority of 674 (71.3%) individuals experienced it before the age of 25, and the age at onset ranged from 6 months–82 years (mean 20.5 years). Physical, topical, and systemic pharmaceutical therapy, as well as depigmentation procedures. There are still a number of unapproved treatments in use. However, these are also included in the current study because of the encouraging first findings.

Keywords: Herbs, herbal medicine, melanocytes, remedies, repigmentation, treatments, vitiligo

INTRODUCTION

A frequent acquired pigmentation condition, vitiligo is typically characterized by the formation of distinct, depigmented skin macules. Lesional skin biopsies show a marked decrease in epidermal melanocytes [1–4]. Both localized and widespread lesions are possible, and they can combine to form sizable, depigmented patches. The condition has a significant negative influence on both children's and adults' quality of life and is particularly deformative in those with darkly pigmented skin due to the contrast between the white patches and healthy skin [5, 6]. Vitiligo patients endure low self-esteem, social exclusion, and stigmatization [7–10].

This topic will review the pathogenesis, classification, clinical manifestations, and diagnosis of

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vitiligo. The management and prognosis of vitiligo are discussed separately. Other pigmentation disorders are also discussed separately.

- (See "Vitiligo: Management and prognosis")
- (See "Acquired hypopigmentation disorders other than vitiligo")
- (See "Acquired hyperpigmentation disorders")
- (See "Melasma: Management")
- (See "Postinflammatory hyperpigmentation").

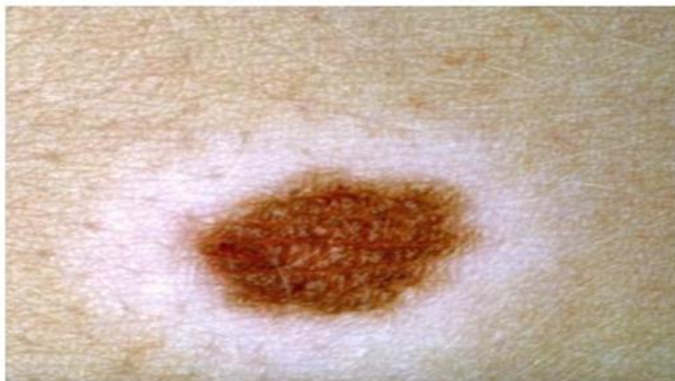
HISTORY

The past "Vitiligo" is derived from the Latin word "vitilus," meaning "calf." The Roman physician Celsus was the first to use the word in the

early decades of the common era [11]. He asserted that the white patches caused by the sickness resembled the white spots on a spotted calf.

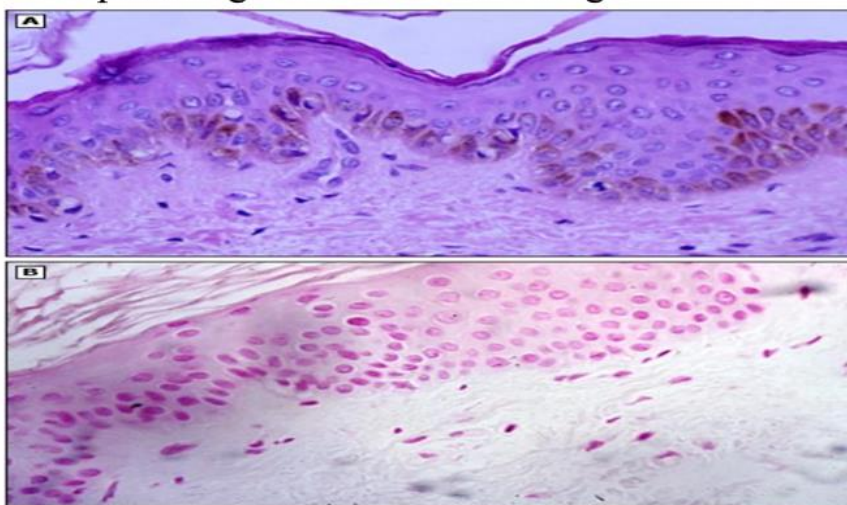
The ancient ailment known as vitiligo is mentioned in religious texts including the Bible, Veda, and Holy Quran. Even the terms “Bai Dian Feng” for traditional Chinese medicine, “Shewetakusta” in the ancient Indian Atharva Veda, “Kilas” in Vinay Pittah, “Bars,” and “Phulbehri” in Arabic and Punjabi are used to describe the ailment (Figure 1) [12].

Halo Nevus Sutton's Nevus



Stage I Halo Nevus With a Characteristic Depigmented Rim.

Histopathologic Features of Vitiligo



(A) Nonlesional Skin and (B) Lesional Skin Showing an Absence of Melanin and Melanocytes. Hematoxylin and Eosin Stain.

Figure 1. Halo Nevus (Sutton’s Nevus).

EPIDEMIOLOGY

The study of epidemiology The most prevalent skin disorder that results in depigmentation is vitiligo, which affects 0.5–2% of people globally, including adults and children [13, 14]. On the Danish island of Bornholm, vitiligo was discovered to affect 0.38 percent of the population in 1977, according to one of the biggest epidemiological surveys ever recorded [13] (Figure 2 and Table 1).

CONNECTED DISEASES

Autoimmune conditions: Alopecia areata, psoriasis, type 1 diabetes, rheumatoid arthritis, inflammatory bowel disease, pernicious anemia, linear morphea, myasthenia gravis, discoid, and

systemic lupus erythematosus, Sjögren syndrome, and other autoimmune or immune-mediated conditions are commonly linked to vitiligo. Generalized vitiligo is more common in persons with concomitant autoimmune illnesses than in those without such conditions [15].

Table 1. Classification of vitiligo.

Type of vitiligo	Subtypes	Clinical features
Nonsegmental vitiligo	Generalized	<ul style="list-style-type: none"> • Symmetric, bilateral, depigmented macules in a random distribution over the entire body surface • Onset usually before age 30 years • Evolving over time
	Acral or acrofacial	<ul style="list-style-type: none"> • Only extremities and/or face involved
	Focal	
	Mucosal	<ul style="list-style-type: none"> • Multiple mucosal sites involved • Usually associated with generalized vitiligo
	Universal	<ul style="list-style-type: none"> • Usually involves 80–90% of the body surface area
Segmental vitiligo	Monosegmental Bisegmental Plurisegmental	<ul style="list-style-type: none"> • Unilateral, asymmetric distribution of white macules following a cutaneous segment (dermatomal distribution) • Monosegmental most common • Early age of onset • Rapid stabilization
	Mixed vitiligo	Combination of nonsegmental and segmental vitiligo
Rare variants	Vitiligo minor	<ul style="list-style-type: none"> • Incomplete depigmentation • More common in dark-skinned individuals
	Follicular vitiligo	
Unclassified	Multifocal asymmetricSingle mucosal site involved	
Data from		
<ul style="list-style-type: none"> • Kovacevic M, Stanimirovic A, Vucic M, et al. Mixed vitiligo of Blaschko lines: a newly discovered presentation of vitiligo responsive to combination treatment. <i>Dermatol Ther</i> 2016 [Epub ahead of print]. • Ezzedine K, Lim HW, Suzuki T, et al. Revised classification/nomenclature of vitiligo and related issues: The Vitiligo Global Issues Consensus Conference. <i>Pigment Cell Melanoma Res</i> 2012; 25: E1. 		



(A) Nonsegmental Facial Vitiligo Before Treatment.

(B) Complete Repigmentation After Treatment with Topical Tacrolimus for Three Months.

Figure 2. (A) Nonsegmental facial vitiligo before treatment. (B). Complete repigmentation after treatment with topical tacrolimus for three months.

Several Genetic Disorders are Linked to Vitiligo, Including

- *Vogt–Koyanagi*: Harada syndrome, a rare multisystem disease marked by alopecia, dysacusia, vitiligo, signs of meningeal irritation, and chronic uveitis [16]. Poliosis is characterized by a decrease or absence of melanin or color in head hair.

- *Alezzandrini Syndrome*: Unilateral face vitiligo, unilateral retinal degeneration, poliosis (reduction or absence of melanin or color in head hair), and hearing loss are the hallmarks of Alezzandrini syndrome, a rare illness [17, 18].

DIAGNOSTICS DIAGNOSIS

When acquired, distinct, well-defined, consistently white macules with convex edges encircled by normal skin without inflammation or textural abnormalities are observed, the diagnosis of vitiligo is typically simple [19].

The following historical details are useful for the diagnosis:

- Age at lesions began
- Possible predisposing factors or events
- Lesion symptoms
- Lesions' progression or spread
- Lesions' changes over time
- Concomitant diseases present
- Current medications
- Workplace history or chemical exposure
- Family history of vitiligo and autoimmune diseases

TREATING VITILIGO

Although there are no therapies for vitiligo, herbal, and pharmaceutical medicines can help encourage the formation of new pigment cells in the skin. Herbal medicines include the following.

- *Ginkgo Biloba*: widely known as the “maiden hair tree,” is one of the oldest trees on Earth. Its leaves and seeds are commonly utilized in medicine. Ginkgo biloba, a popular herb, can treat allergies, vein difficulties, premenstrual syndrome, migraines, vertigo, and other conditions. The seeds and leaves of these plants have been utilized for medicinal purposes for centuries. It primarily demonstrates anti-inflammatory, repigmentary, immunomodulatory, and antioxidant effects [20, 21].
- *Muskmelon*: The Fruit Muskmelons are part of the Cucurbitaceae family. It normally grows as a climbing plant with 1.5-meter-long stalks that sprawl across the ground. It is commonly found near riverbanks and in deserts [22, 23]. Curcuma melo extract has high quantities of an antioxidant called superoxide Dismutase. This antioxidant is essential for avoiding melanocyte damage caused by oxidative stress [24]. When mixed with narrow band UVB and curcuma melo extract, it is applied to skin lesions and is beneficial in treating vitiligo [25].
- *Surgery*: Procedures Only segmental or stable vitiligo can be treated with surgery. Micropigmentation and skin grafting are the most popular surgical techniques. In order to assess the patient's positive response and the unfavorable occurrence of Koebner's phenomenon at the donor site after 2–3 months of follow-up, it is highly recommended to conduct a mini-grafting test prior to performing the definitive graft on hypopigmented patches that have been stable for at least two years. Among the adverse effects of vitiligo surgery include the Koebner phenomenon at the donor site, keloids, hyperpigmentation, "cobblestoning," scarring, and infections. Split-thickness suction grafting seems to be better than control, suction blister, and combination split-thickness suction grafts.

Vitiligo's Genetic Components

Epidemiological evidence Vitiligo is a condition that affects 0.5–2% of people worldwide, regardless of ethnicity or sex. Numerous studies on families have demonstrated that the prevalence has increased among close relatives of those who are impacted. This increase in close biological relations was almost 4.5 times in a large series conducted in India [26]. The relative risk (RR) for vitiligo is approximately 7 for parents, 12 for siblings, and 36 for offspring, according to a different study conducted on 160 white relatives residing in the US [27].

Is it a Single Vitiligo or Multiple Cases?

According to the majority of authors, vitiligo is a distinct condition with multiple clinical manifestations but only one physiopathology. In fact, practically every recent genetic study has disregarded the patients' clinical presentations. Recent studies, however, strongly imply that there are several vitiligos rather than just one. 2247 Chinese patients and their families were the subject of a sophisticated segregation analysis. The results were examined based on their clinical manifestations for the first time [28].

What Gene or Genes Cause Vitiligo?

An oligogenic autoimmune susceptibility region known as AIS1 (1p31.3p32.2) was significantly linked in two extensive genome-wide screenings for generalized vitiligo [29, 30]. Two novel susceptibility loci and the confirmation of AIS1's location were discovered in a long-term investigation including 102 multiplex families. Chromosome 7 has AIS2 at 89.4 cM, while Chromosome 8 has AIS3 at 54.2 cM. Furthermore, two new possible connections were discovered at 88.1 cM on chromosome 9q and at 109.4 cM on 13q (Table 2 and Figure 3) [31], and the locus SLEV1 at 4.3 cM on chromosome 17 was confirmed.

Table 2. Susceptibility loci for vitiligo.

Susceptibility locus	Mapping
SLEV1	17p13
AIS1	1p31.3–p32.2
AIS2	7p
AIS3	8q
—	6p21.3–21.4
—	4q13–q21

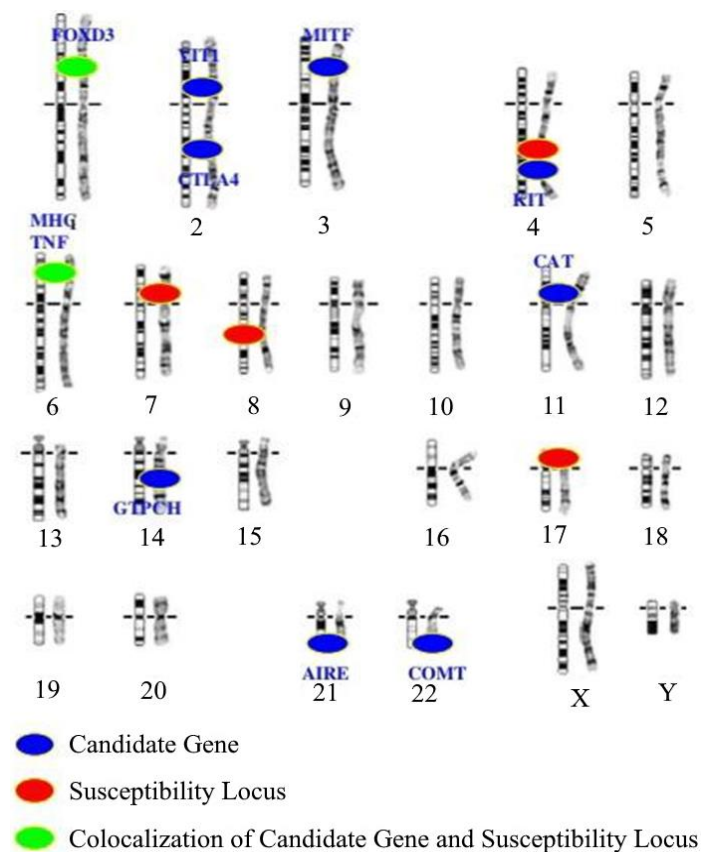


Figure 3. Susceptibility loci for vitiligo.

HOMEMADE FORMULATION PREPARATION

Psoralea and Turmeric Seed: Vitiligo is treated using psoralen, the herb that has the best results. Turmeric's anti-inflammatory and antibacterial qualities make it an essential component of Ayurvedic medicine due to its many health advantages. When coupled with turmeric, both of them work well as a treatment for vitiligo. Because it could be hazardous if not handled carefully, psoralen should be understood in all its aspects [32–35].

CONCLUSION

Because of its recurrent nature and inconsistent clinical improvement, vitiligo treatment can occasionally be discouraging. The type of vitiligo, whether it is active, and the drug's side-effect profile should all be taken into consideration when tailoring therapy. There are few treatments available for vitiligo, no All patients can reliably experience repigmentation after a known therapy. To better understand the pathophysiology of vitiligo and identify new therapeutic targets, more scientific and clinical research is needed. Numerous new treatments are in the works, and the majority of the knowledge about them comes from case studies or series. To more accurately assess their effectiveness, more randomized controlled trials are needed.

Consent Declaration for the Patient

The authors attest to having acquired all necessary patient permission documents. According to the form, the patient or patients have consented to the publication of their photos and other clinical data. The patients are aware that although every attempt will be made to hide their identities, anonymity cannot be ensured and that their names and initials will not be published. No sponsorship or financial assistance. Conflicts of interest No conflicts of interest exist.

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