

## VITILIGO AND HERBAL REMEDIES - A NOVEL APPROACH OF VITILIGO MANAGEMENT

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### ABSTRACT

The most prevalent depigmenting condition, vitiligo, is characterized by white spots on the skin. The pathogenetic basis of vitiligo is the autoimmune destruction of melanocytes; oxidative stress, for example, is accountable for the molecular and organelle dysfunction, exposure to melanocyte-specific antigens, and death of melanocytes, and thus plays a significant role in the progression of vitiligo. In recent years, a wide range of pharmacological activities for various skin problems have been proven by natural compounds. This study's primary focus is on the processes and effects of natural chemicals against vitiligo models. The pathogenetic basis of vitiligo is the autoimmune destruction of melanocytes; oxidative stress, for example, is accountable for the molecular and organelle dysfunction, exposure to melanocyte-specific antigens, and death of melanocytes, and thus plays a significant role in the progression of vitiligo. Natural products have demonstrated a broad spectrum of pharmacological bioactivities against several skin disorders in recent years. This review centers on the processes and effects of natural compounds against models of vitiligo. Research has demonstrated that a few naturally occurring substances, including coumarins, glycosides, flavonoids, and phenols, have a protective function in melanocytes and stop the depigmentation process. The enormous potential of plants as anti-vitiligo agents is discussed in this paper, along with prospective future research areas.

**KEYWORDS:** Vitiligo, Remedies, Melanocyte, Auto-immune, Flavonoids.

### INTRODUCTION

Skin disorder called vitiligo results in the skin becoming whiter. It happens when the pigment-producing cells in the skin, known as melanocytes, perish or malfunction. This is problematic since these cells filter out solar light.<sup>[1]</sup> Affected skin areas become white and typically have distinct borders. It's also possible for skin-derived hair to become white.<sup>[2]</sup> Those with darker skin tones tend to notice it more.<sup>[3]</sup> Vitiligo's precise etiology is complicated and poorly understood. The immune system, genetics, and environment might all be contributing factors. Stress can also weaken the immune system, which makes the body react by starting to remove pigment from the skin. This can result in vitiligo. Usually, the body's two sides are impacted.<sup>[1,2]</sup> Rarely

does this condition affect anyone above the age of 20. These patches can take on a different form and frequently appear symmetrically on both sides.<sup>[1]</sup> There is no treatment for vitiligo. However, therapy may be able to reverse or halt the discoloration process and restore some of your skin's color.<sup>[4]</sup> Topical steroids are used topically in the form of cream or ointment. In certain cases, they can halt the white spots from spreading and even partially return your natural skin tone. An adult may be administered a topical steroid if: less than 10% of your body has non-segmental vitiligo.

The Latin word "vitilus," which means "calf," is whence the name "vitiligo" originates. Celsus, a Roman physician, first used the phrase in the first century A.D.<sup>[6]</sup>

He said that the disease's white patches resembled a spotted calf's white spots. A condition that dates back centuries, vitiligo is described in scriptures like the Bible, Veda, and Holy Quran. Even the names "Bai Dian Feng" in traditional Chinese medicine, "Shewetakusta" in the ancient Indian Atharva Veda, "Kilas" in the Buddhist Vinay Pitah, and "Bars" and "Phulbehri" in Arabic and Punjabi language are recorded for the illness.<sup>[7]</sup>

### Sign & Symptoms<sup>[8-10]</sup>

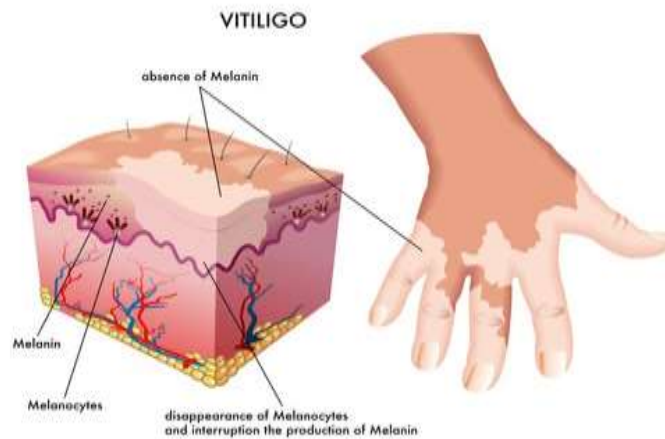
#### Vitiligo signs include

- Patchy loss of skin color, which usually first appears on the hands, face, and areas around body openings and the genitals
- Premature whitening or graying of the hair on your scalp, eyelashes, eyebrows or beard
- Loss of color in the tissues that line the inside of the mouth and nose (Mucous membranes)

Vitiligo can start at any age, but usually appears before age 30. Depending on the type of vitiligo you have, it may affect:

- ◆ **Nearly all skin surfaces.** With this type, called universal vitiligo, the discoloration affects nearly all skin surfaces.
- ◆ **Many parts of the body.** With this most common type, called generalized vitiligo, the discolored patches often progress similarly on corresponding body parts (symmetrically).
- ◆ **Only one side or part of the body.** This type, called segmental vitiligo, tends to occur at a younger age, progress for a year or two, then stop.
- ◆ **One or only a few areas of the body.** This type is called localized (focal) vitiligo.
- ◆ **The face and hands.** With this type, called acrofacial vitiligo, the affected skin is on the face and hands, and around body openings, such as the eyes, nose and ears.

It's difficult to predict how this disease will progress. Sometimes the patches stop forming without treatment. In most cases, pigment loss spreads and eventually involves most of the skin. Occasionally, the skin gets its color back.



### Causes<sup>[11-15]</sup>

The absence of the skin pigment melanin is the cause of vitiligo. Your skin's color is caused by melanocytes, which are skin cells that create melanin. There aren't enough active melanocytes in vitiligo to generate enough melanin for your skin. Your skin or hair will get white spots as a result of this. The precise cause of the melanocytes' disappearance from the skin's afflicted regions is unknown. Studies clearly demonstrate that immune system modifications are the cause of vitiligo, despite the fact that several theories have been proposed as possible causes.

#### Auto-immune conditions

Non-segmental vitiligo (the most common type) is thought to be an autoimmune condition. In autoimmune conditions, the immune system does not work properly.

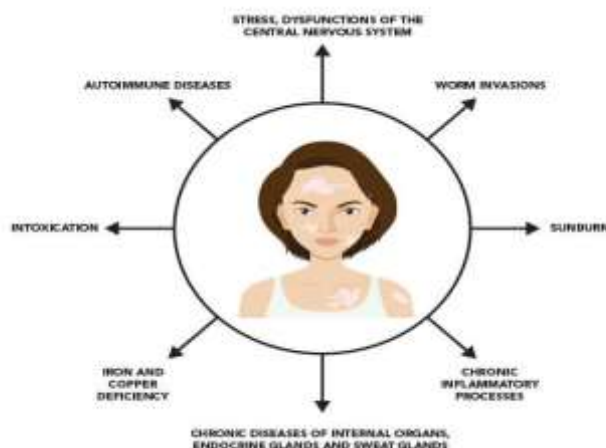
Instead of attacking foreign cells, such as viruses, your immune system attacks your body's healthy cells and tissue.

- 1) If you have non-segmental vitiligo, your immune system destroys the melanocyte skin cells that make melanin.
- 2) Vitiligo is also associated with other autoimmune conditions, such as hyperthyroidism (An overactive thyroid gland), but not everyone with vitiligo will develop these conditions.

#### Risk factors

You may be at increased risk of developing non-segmental vitiligo if:

1. If other members of your family have it
2. If there's a family history of other autoimmune conditions
3. If you have another autoimmune condition
4. If you have melanoma
5. If you have particular changes in your genes that are known to be linked to non-segmental vitiligo



### Role of herbal remedies in vitiligo management

Various studies have revealed the potent activity of many herbs including *Ammi visnaga*, *Atractylodes lancea*, *Atractylodes japonica*, *Carthamus tinctorius*, *Ficus carica*, *Ficus hispida*, *Picrorhiza kurroa*, *Polygala tenuifolia*, *Polypodium leucotomos*, *Rumex crispus*,

*Semecarpus anacardium*, *Xanthium strumarium*, *Angelicae dahuricae*, *Astragalus membranaceus*, *Cassia occidentalis*, *Cuscuta chinensis*, *Flos carthami*, *Lespedeza bicolor*, *Ligustrum lucidum* against vitiligo.<sup>[16-19]</sup>

Some more potent herbs that are used for vitiligo management are listed below

| S.N. | Herbal Remedy                             | Significance/ Activity   |
|------|---|--|
| 1    | Haridra ( <i>Curcuma longa</i> )          | The main curcuminoid in turmeric, a well-known Indian spice that belongs to the ginger family (Zingiberaceae), is curcumin. Ayurvedic medicine has historically utilized turmeric as a blood purifier, antimicrobial, and treatment for skin conditions and wound healing. In addition, it was frequently used cosmetically and externally to treat wounds. It suppresses fungus and viral illness. <sup>[20]</sup> Turmeric, also known as haridra, may help in vitiligo repigmentation. Due to its anti-inflammatory and antioxidant properties, curcumin, the main ingredient in turmeric, aids in vitiligo skin restoration. <sup>[21]</sup> |
| 2    | Bakuchi ( <i>Psoralea corylifolia</i> )   | It is commonly referred to as Bakuchi. In India, it is widely distributed. Its seed possesses cardiac, cytotoxic, anthelmintic, antibacterial, astringent, aphrodisiac, diuretic, and stimulant qualities. <sup>[20]</sup> It is a crucial plant for vitiligo therapy. This plant produces a range of coumarins, including psoralen, in its seeds. Psoralea and sun exposure work well together to cure Vitiligo, or white spots on the skin. <sup>[21]</sup>  |
| 3    | Katuki ( <i>Picrorrhiza kurroa</i> )      | The herb is useful in treating vitiligo and other skin conditions. This works by simply causing the skin to repigment, and it may be used as both a natural and herbal remedy. demonstrates antioxidant qualities and immune system modulation. <sup>[20]</sup>  |
| 4    | Ashwagandha ( <i>Withania somnifera</i> ) | It is the strongest herb of its type and is commonly referred to as ashwagandha. essentially used as a restorative medication. Similar to ginseng in traditional Chinese medicine, <i>Withania somnifera</i> has a role in Ayurvedic therapies. Another name for it is "Indian Ginseng." An essential ingredient in many Ayurvedic medications for preserving health is <i>Withania somnifera</i> . It is thought to be an excellent nerve tonic and to improve immunity. <sup>[20]</sup>  |
| 5    | Kumari ( <i>Aloe barbadensis</i> )        | It's an effective ayurvedic treatment for vitiligo. Strong anti-inflammatory and antioxidant qualities in the plant help to calm and repair skin. <sup>[21]</sup>  |
| 6    | Basil-Herb ( <i>Ocimum Sanctum</i> )      | Known by most as tulsi, it may be found in practically every Indian home. used to treat bacterial infections, fungal infections, and respiratory issues. Tulsi is beneficial for eye and skin care. It contributes to increased immunity and enhances body metabolism  |

|     |  |  |
|-----|--|--|
|     |  | effectively. It is frequently used to treat typhoid and malaria due to its antimalarial properties. <sup>[20]</sup>  |
| 7   | Neem ( <i>Azadirachta indica</i> )       | It is often referred to as Neem or Nimba in India. The neem tree grows all throughout India. It's a widely used village tree. often used as a toothbrush in India. Many bacterial infections can be cured by its antiseptic properties. <sup>[20]</sup> In Ayurveda, neem is regarded as a potent blood cleanser. Neem leaves are used to treat vitiligo, leprosy, and other skin conditions. Its immunomodulating ability makes it useful for treating cutaneous white spots. <sup>[21]</sup> |
| 8   | Giloy ( <i>Tinospora cordifolia</i> )    | Tinospora, a member of the Menispermaceae family and a higher altitude plant, is more well known as "Guduchi." According to Ayurveda, the plant is more well-known for tridos-samak and boosting immunity. often utilized in formulas for a variety of skin conditions, liver problems, and fever. <sup>[20]</sup>   |
| 9   | Shatavari ( <i>Asparagus racemosus</i> ) | Known by another name, Shatavari, it is a potent herb belonging to the Liliaceae family. This climbing plant is found all throughout India's low forest regions. Its primary purpose is to enhance immunity and generally boost health. Several Ayurvedic formulas for promoting health use the powder. <sup>[20]</sup>  |
| 10. | Chirayata ( <i>Swertia chirata</i> )     | Chirayata is its name in Indian. Due to its antibacterial qualities, it is typically utilized as a blood purifier. used to treat a range of infections and skin conditions. It is used to treat malaria and has anti-inflammatory qualities. <sup>[20]</sup>   |

## CONCLUSION

It's uncertain what causes vitiligo exactly. It happens when the pigment-producing cells in the skin, known as melanocytes, perish or malfunction. However, this is an immune system-related condition rather than just a skin ailment. Individuals with a family history of vitiligo are more likely to develop the condition, although it cannot be acquired from another person and is not an infection. Although there is no known treatment for vitiligo, it may be prevented by drinking lots of water and eating plenty of leafy green vegetables. Amino acids, vitamin C, and vitamin B all shield against patches. Steer clear of alcohol, caffeine, seafood, and red meat to prevent the spots. Papaya slices rubbed on the patches aid in the treatment of vitiligo. Although there is no full cure for vitiligo, there are treatments available. Numerous plants, including as neem, ashwagandha, sarawari, chirapata, tulsi, and guduchi, can aid with vitiligo. Research is still needed to develop more effective dosage forms and use herbal medicines in the management of vitiligo and other skin conditions, as we now know they have no negative effects and are useful in the treatment of vitiligo.

## Conflict of interest

The authors declare that the review was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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