PHARMACOLOGICAL AND NON–PHARMACOLOGICAL APPROACHES TO VITILIGO

Umama Yezdani¹, Mahmood Ali², Mohammad Gayoor Khan³*, Ayush Kumar⁴, Prince Bhalla⁵ and Mayur Sadar⁶

¹MRM College of Pharmacy, Hyderabad, India.
²MRM College of Pharmacy, Hyderabad, India.
³Truba Institute of Pharmacy Bhopal, MP, India.
⁴MMDU, University, Ambala, India.
⁵ISF College of Pharmacy, Moga, Punjab, India.
⁶Anuradha College of Pharmacy, MH, India.

ABSTRACT

Vitiligo is a long-run skin condition characterised by patches of the skin losing their pigment. The patches of skin affected become white and typically have sharp margins. The hair from the skin might also become white. The inside of the mouth and nose might also be concerned. The extent and rate of color loss from skin condition is unpredictable. Vitiligo happens when the cells that produce melanin die or stop functioning. Vitiligo affects individuals of all skin sorts, but it may be more noticeable in people with darker skin. Risk factors include a family history of the condition or other autoimmune diseases, such as hyperthyroidism, alopecia areata, and pernicious anemia. It is not contagious. Prolonged periods of psychological stress might be involved in the onset and progression of the vitiligo. Histochemically, there is a lack of DOPA-positive melanocytes in the basal layer of the epidermis. Patients with illness|disease of the skin|skin disorder skin problem|skin condition} usually develop autoimmune thyroid disease or other autoimmune diseases. A blood test to examine thyroid function should be considered in sight of the high prevalence of autoimmune thyroid disease in patients with vitiligo. This disease targets most of the psychological conditions to occur and is very much harmful as may even lead to some serious effects which may even lead to suicide. The objective of the study was to conduct a review of home-based nonpharmacological treatment and pharmacological treatment of vitiligo. This
study mainly aims to show which treatment is more effective and safe. These parameters are calculated based on the efficacy and safety of the drug.

**KEYWORDS:** Autoimmune Diseases, Vitiligo, Homeopathic Treatment, Allopathic Treatment.

**INTRODUCTION**

Vitiligo is an autoimmune and autoinflammatory condition which is caused due to our own immune system attacking itself and it causes white colored patches (the loss of skin color in blotches). This is the kind of disease which is observed in 1% of the total population. The extent and rate of color loss from vitiligo is unpredictable and have sharp margins. The hair from the skin also becomes white. The inside of the mouth and nose may also be involved. It occurs in people with all skin types and color but mostly occurs in people with dark skin where all the areas of their body are dark and effected areas are white in color. This condition even causes much psychological stress to the effected people from relatives and society. The risk of autoimmune and auto inflammatory diseases is assumed to depend upon interactions between environmental factors and specific variants of specific genes. This may result in many other diseases to attack these individuals. It is very easy to diagnose this disease as it can be directly done by the physical examination. Descriptions of a disease believed to be vitiligo date back to a passage in the medical text Ebers Papyrus circa 1500 BCE in ancient Egypt. Mentions of whitening of the skin were also present circa 1400 BCE in sacred Indian texts such as Atharvaveda as well as Shinto prayers in East Asia circa 1200 BCE. The Hebrew word "Tzaraath" from the Old Testament book of Leviticus dating to 1280 BCE (or 1312 BCE]) described a group of skin diseases associated with white spots, and a subsequent translation to Greek led to continuing conflation of these with vitiligo with Hansen's disease and spiritual uncleanness.

Medical sources in the ancient world such as Hippocrates often did not differentiate between vitiligo and leprosy, often grouping these diseases together. In Arabic literature, the word "alabras" has been associated with vitiligo, with this word found in the Quran. The name "vitiligo" was 1st employed by the Roman MD Aulus Cornelius Celsus in his classic medical text de Medicina.

The etymology of the term "vitiligo" is believed to be derived from "vitium", which means "defect" or "blemish".
SIGN AND SYMPTOMS

- There is a loss of skin color and they appear in a patchy form mostly on the areas exposed to the sun.
- This may appear in various parts of the body like hands, feet, arms, scalp, genitalia, face, lips etc.
- Premature graying or whitening of the hairs is also one of the major indications.
- Change in color of the eye or reduction in the vision is also one of the major indications.

CAUSES

- As this is an auto immune disorder our immune system attacks our own melanocytes and causes the discoloration of the cells.
- This is mostly hereditary.
- This may even be caused due to some environmental conditions.
- Also occurs due to the changes in the genes.
- Deficiency of vitamin and minerals in the blood.

DIAGNOSIS

It can be diagnosed by physical examination, a questionnaire test and several other tests which include

- **Tissue culture test**: A sample of tissue is taken from the skin is taken and is diagnosed for the changes in the cells and tissues.
- **Blood test**: by doing this blood test the sample of blood is extracted from the patient and then it is tested to see the level of melanin in the blood.
- **Eye test**: in about 5% of people affected with vitiligo it may also affect the eyes in various ways like reducing the vision. Redness of eye and inflammation is eye etc.
MANAGEMENT
Management of vitiligo includes both pharmacological and non-pharmacological procedures.

Non-pharmacological treatment: There are many home remedies which can reduce this discoloration of skin and also has been very effective. Some of them are mentioned below.

Homemade preparation of formulation
1. Tamarind and Psoralea seeds: The most effective herb (psoralen) is used for the treatment of vitiligo. Turmeric has anti-inflammatory and antiseptic properties in it and also plays an important role in Ayurvedic medicine because of its health benefits. When both of them are combined with turmeric as an effective cure for vitiligo. The psoralen should be handled very carefully and with complete information about it, as otherwise, it could be harmful.

   Direction for Use: Soak seeds of Psoralea and turmeric in water for about four days. Dry the soaked seeds and grind to a paste. The paste should be applied on the white spots for at least one month. Within a month, you will be noticing changes in the skin, for best results, it is recommended to continue treatment beyond one month.

2. Mustard oil and turmeric: Turmeric has anti-inflammatory and antiseptic it has higher health benefits. It increases the body's natural immunity when used on wounds that can prevent bacterial infection. Home remedies which are made from mustard oil and turmeric is very beneficial for patients with vitiligo. The oil is antibacterial and can help detoxify the body.

   Direction for Use: Mix 5 tablespoons of turmeric powder with 250 ml of mustard oil. Ensure that turmeric is mixed thoroughly with the oil. Apply this mixture twice a day on the white patches on the skin. Treatment ought to be strictly followed for a year to get good results. The spots will disappear and your skin will be healthier. The remedy is natural and safe.

3. Lemon juice and Basil leaves: Basil leaves are one of the common useful kitchen ingredients. It has an anti-aging and antiviral effect and has proved effective in curing vitiligo and stress. Lemon juice has much positive effect as it also acts as an anti-inflammatory effect and a good source of vitamin C. When lemon juice and basil leaves extracts are combined they stimulate the stimulation of melanin in the body.
**Direction to Use:** In a bowl, mix the lemon juice and basil leaf extract. Apply the mixture on the white spots and leave it for a while. Use this treatment 3 or 4 times daily. Within 5-6 months you can see visible results. The treatment has no side effects and is absolutely safe for patients with vitiligo.

4. **The water stored in copper utensil:** As vitiligo is also caused due to the deficiency of vitamins and some other deficiencies. Water reserves in copper bottles, glasses are very useful.

**Directions for use:** The water used in copper utensil is kept overnight. The water should be taken every morning and within six months we can notice a difference in the skin. The treatment promotes the production of melanin by melanocytes stimulation in the body. It is a safe home remedy and with no side effects.

5. **Phototherapy:** Phototherapy is considered to be as a second-line treatment for vitiligo. Exposing the skin to light from UVB a lamp is that the commonest treatment for vitiligo.

**Directions for use:** The treatments can be done at home with a UVB lamp. The time of exposure should be managed so that the skin should not experience overexposure. Treatment can take a few weeks if the spots are on the neck and face. And this should be done 2-3 times per week.

**Curing Vitiligo with a proper Diet Plan:** A proper diet plan is very important for the patients suffering with vitiligo. Hence following a diet plan rich of vitamins and minerals can help its treatment very easily. Some of them are

- Plenty of vegetables ought to be included in the diet as they're a wonderful source of minerals and nutriment and even enhances skin cells to supply melanin.
- Food made of fibers, minerals, and vitamin-like whole grain rice, pasta and breads ought to be consumed.
- Fruits like blueberries contain antioxidants that not solely protect the skin however additionally facilitate to repair the injury.
- Fruits giving vitamin C ought to be excluded from the diet.
- Eating nuts: Nuts contain protecting phytochemicals and good fats that are useful for the skin. it's also rich in vitamin E.
Eating beef liver because it is additionally very rich in B12 and vitamin B which can be helpful in the treatment of vitiligo.

Vitamin A, copper, riboflavin, antioxidant and essential amino acid are very useful in the production of melanin within the blood.

**Pharmacological treatment**

It has been shown that No drug will fully stop vitiligo — the loss of pigment cells (melanocytes). However some medication used alone or with light therapy, will facilitate restore some skin tone to some extent. Some of them are mentioned below.

1. **Anti-inflammatory drug agents**

Corticosteroids in the form of creams are used. This could be applied on the affected area twice daily.

**Side effects**

skin thinning, the appearance of streaks or lines on the skin.

2. **Medications affecting the immune system**

Ointments containing tacrolimus or pimecrolimus (calcineurin inhibitors) is also effective for individuals with tiny areas of depigmentation, particularly on the face and neck.

**Side effects**

malignant neoplastic disease, carcinoma.

**Other therapies include**

- **Combining psoralen and light therapy.** This treatment combines a psoralen with light therapy (photochemotherapy) to return color to the light patches. After you take psoralen by mouth or apply it to the affected skin, the patient is exposed to ultraviolet A (UVA), UVB light or excimer light. These approaches tend to have better results than just medication or just light. The treatment is needed to be repeated up to three times a week for six to 12 months.

- **Depigmentation:** This therapy is mostly used when no other therapy works and is done under much supervision. In this the area of skin which is not being affected is also lightened so that it looks similar to the skin affected with vitiligo.

**Side effects:** redness, itching, swelling and dry skin.
**Skin camouflage:** In mild cases, vitiligo patches can be hidden with makeup or by other cosmetic camouflage solutions. If the affected person is of pale-skinned, then the patches can be made less visible by avoiding tanning of the unaffected skin.

**Surgeries:** This is the process which is used when no other option works and the patient is willing to treat his disease. Although it is not very safe procedure but is useful upto an higher extent. The surgical procedures include.

- **Skin grafting:** In this procedure, doctor removes very small sections of normal, pigmented skin and attaches them to the areas that have lost pigment. This procedure is usually used if you have tiny patches of vitiligo.

**Side effects:** Include infection, scarring, a cobblestone appearance, spotty color and failure of the area to recolor.

- **Blister grafting:** In this procedure, the doctor creates blisters on the pigmented skin, usually with suction. Then he removes the tops of the blisters and transplants them to an area of discolored skin.

**Side effects:** scarring, a cobblestone appearance and failure of the area to recolor. And the skin damage caused by suctioning may trigger another patch of vitiligo.

- **Micropigmentation:** In this technique, doctor uses a special surgical instrument to implant pigment into your skin. It's most effective in and around the lips in people with darker complexions.

**Side effects:** Difficulty matching the skin color and potential for the tattooing to trigger another patch of vitiligo.

**Future treatments**
1. **Afamelanotide:** [A drug to stimulate color-producing cells (melanocytes)]. This potential treatment is been implanted under the skin to promote the growth of melanocytes.
2. **Prostaglandin E2:** [A drug that helps control melanocytes] this is being tested as a way to restore skin color in people with localized vitiligo that isn't spreading. It is in the form of gel.
3. **Tofacitinib:** [A drug that reverses loss of color].this is an oral drug typically used to treat rheumatoid arthritis, has shown some potential as a treatment for vitiligo.
RESULT
This study shows that non-pharmacological methods are the best and most effective treatment of treating vitiligo as it contains no side effects and pharmacological treatment causes many irreversible side effects. Hence, conforms that non-pharmacological treatment (home remedies) and light therapies are the most effective treatment.

DISCUSSION
Vitiligo is an autoimmune and auto-inflammatory condition which is caused due to our own immune system attacking itself and it causes white colored patches (the loss of skin color in blotches). The extent and rate of color loss from vitiligo are unpredictable and have sharp margins. There is a loss of skin color and they appear in patchy. This may appear in various parts of the body like hands, feet, arms, scalp, genitalia, face, lips etc. they can include premature graying or whitening of the hairs. Change in color of the eye or reduction in the vision. Deficiency of vitamin and minerals in blood and family history is the major cause of it. It can be diagnosed by blood test, tissue culture test etc. There are various types of treatments are present like pharmacological treatment with drugs, non-pharmacological treatment by home remedies and light therapy and other surgical procedures are also present.

Non-pharmacological therapies include natural products like turmeric, lemon, basil leaves, Psoralea seeds and mustard oil which does not contain any harmful effects. They are the products which are naturally extracted from the plants. whereas according to the studies there is no completely safe, effective and complete cure of vitiligo. Many drugs used to treat vitiligo may also result in generation of some other type of skin infections like skin cancer, lymphoma etc. Various surgeries are also present but they are not safe and may not even cause any benefit to the patient. When this is compared in cost: benefit ratio non-pharmacological treatment proves to be the best as we can gain more benefit in a minimum cost. Hence, after complete study we conclude that non-pharmacological treatment proves to be the most effective and safest treatment of vitiligo.

REFERENCES


11. Vitiligo: Current Knowledge & Nutritional Therapy Book Author Leopoldo F. Montes, 45-76.

12. Vitiligo Cure: Cure Your Skin and Become Happy & Confident Again Book Author Createspace Independent Pub and Swanson, 24-29.


15. Vitiligo: Nutritional Therapy Book by Leopoldo F. Montes (Author); 220-231.