What is vitiligo?

Vitiligo is the loss of skin pigmentation. It occurs when the melanocytes stop producing the pigment melanin. The biological trigger is still unknown. Many factors are involved, including: antioxidative capacity, insufficient methylation, low fibroblast activity levels, stress, glycation, cytokines, lipidic peroxidation, inflammation, autoimmune factors, etc.

Approximately 2% of the world population suffers from vitiligo.

Natural treatments for vitiligo

Most of the research on the treatment of vitiligo focuses on natural products. Some are commonly used and are considered to be food supplements, such as extracts from the plants *Vitis vinifera* (leaves of the common grape vine), *Aesculus hippocastanum* (horse chestnut), *Pinus marítima* (maritime pine), *Ruscus aculeatus* (butcher's broom), *Hamamelis virginiana* (hamamelis) (1), *Camelia sinensis* (green tea) (12), apple seeds (8), extract of *Centella asiatica* (11), and even black pepper extract (*Piper nigrum*) (5). All are useful in one way or another in treating vitiligo.

There are also other less familiar plants, such as the fern *Polypodium leucotomos* (2), aqueous extracts of *Angelica sinensis*, a plant normally used to treat vitiligo in traditional Chinese medicine (6) and extract of *Pinus nigra*, which comes from its trunk (14).

Among specific antioxidants, we see the flavonoid quercetin and folic acid, both associated with the oxidative stress of melanocytes (9). Creatine and its derivatives, as well as soy and its components (diazine, glycitin, genistin, daidzen, glycitein, genistein and saponin), are capable of restructuring and rejuvenating skin damaged by vitiligo (10). *Ginkgo biloba* is another commonly used plant capable of halting depigmentation and safely inducing repigmentation. Its antioxidative property is significant, considering that oxidative stress plays a role in the pathogenesis of vitiligo (7).

*Curcuma longa* is a leading anti-inflammatory agent. It stimulates PPAR activity, making use of the energy that regulates the storage of fatty acids and insulina levels and stimulates peroxisomes (24).

Among the lipoxidation inhibitors we should mention *Phyllanthus emblica*, also called Amla (21).

Some plants, such as *Ammi maius*, with its active ingredients xanthotoxin and imperatorin, were even used in Ancient Egypt (13, 15).

Other products, such as tacrolimus, obtained by fermenting *Streptomyces tsukubaensis*, is used principally for the treatment of vitiligo, but it has yet to be approved for use in the EU (3).

The amino acid L-phenylalanine is a precursor of melanin and is used to treat vitiligo (4). Other amino acids such as tyrosine and the dipeptide tyrosine-arginine, are used as anti-inflammatory agents to prevent skin redness (16). Topical applications containing L-tyrosine (47%) and L-arginine (53%) can even be used as skin treatments, as they boost pigmentation (17).

We should also consider certain vitamins and minerals, in particular vitamin D₃ (18), vitamin B₁₂ (cobalamin), L-ascorbic acid (C) and folic acid (B₉) (19), the group of vitamins A, C and E and the minerals zinc and selenium, as they enhance the transformation of the amino acid L-tyrosine, a precursor of melanin (20).

Recently, the punicalagins from pomegranates have received greater attention as they have been shown to protect against UV-B radiation by inhibiting the induced modulation of NF-κB and the MAPK pathway (22), as well as inducing PON1 paraoxonase (23).
References


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