

# TRX


## Enlightening Solution

TRX contains tranexamic acid, one of the most innovative and multifunctional active ingredients currently in the field of aesthetic pathologies related to spots on the skin with various origins. This synthetic derivative of the amino acid lysine not only helps with in the production of melanin, but also with releasing the vascular, inflammatory part of skin blemishes. It also has the added value of acting on wrinkles caused by dry skin.

Tranexamic Acid helps to reduce and prevent the appearance of hyperpigmentation and improves the appearance of both resistant dark spots and translucent reddish spots caused by surface blood vessels. The results of applying it can be observed, therefore, in multiple aesthetic pathologies, from melasma, solar lentigos, or senile hyperkeratosis, to rosacea, through to post-acne marks or those caused by certain aesthetic treatments.

In all cases, Tranexamic Acid achieves a unique depigmenting, whitening, and mattifying effect that restores uniformity and luminosity to the skin, making it currently one of the leading lighteners for blemished skin.



 Ampoule | 2ml | 0.07 fl.oz. | Box of 10 ampoules

## INDICATIONS

1. Treatment of **hyperpigmentation from various origins**, both endogenous and exogenous:

### ENDOGENOUS CAUSES

- Genetic or hormonal: **melasma, chloasma** or pregnancy mask, **spots during menopause or caused by taking contraceptives**.
- Age: **solar lentigo or senile spots**, also called liver spots.
- Genetic predisposition, such as **ephelides** (commonly freckles, typical of phototypes I and II).
- **Postinflammatory hyperpigmentation**.
- **Deposits of endogenous metabolic products**.
- Vascular disorders, such as **rosacea or couperose** (spider veins).
- Skin lesions such as **acne**.

### EXOGENOUS CAUSES

- **Exposure to UV rays, pollution or other external aggressions**.
- **Taking prescription drugs**.
- Certain **medical-aesthetic treatments**, such as lasers.

2. **Improvement of wrinkles** induced by dry skin.

## RESULTS

- Due to its depigmenting effect:
  - Elimination of dark skin spots, such as senile spots, lentigines, melasma, contraceptive spots, corticosteroids, spots from exposure to sun or pollution, etc.
  - Correction of photoaging.
  - Prevention of the appearance of hyperpigmentation such as melasma.
  - Reduction of darkness in the area of brownish dark circles.
  - Removal of blemishes resulting from inflammation and other lesions, such as acne.
- Due to its vasoconstrictor effect:
  - Reduction of the reddish tone of blood vessels: corrects and prevents rosacea and couperose.
- It evens out the skin tone to make it more homogeneous.
- It lightens the skin with some types of hyperpigmentation\*.
- Brightens the complexion.
- Reduces wrinkles caused by dry skin.

\*Tranexamic Acid, due to its depigmenting and vasoconstrictor effect, eliminates and/or mitigates spots and lightens any hyperpigmented or reddish area, achieving skin with a more homogeneous, lighter, and brighter tone (depigmenting solution with illuminating effect). It is important to point out, however, that it should not be confused with a bleaching solution for unblemished skin (bleaching solution).

## TREATMENTS AND RECOMMENDED MIXTURES

The following recommended mixtures are indicative, prepared as a basic guide for the professional. The skin needs of a patient undergoing hyperpigmentation treatment may vary from session to session. The professional assessment in each case will determine the most appropriate selection of active ingredients with synergistic action for their application in the different treatment sessions.

<b>NUTRITIVE</b> Hyperpigmentation & depigmentant	TRX Polyvitamins	2 ml 2 ml
<b>NUTRITIVE</b> Hyperpigmentation & depigmentant	TRX Amino Acid	2 ml 2 ml
<b>ANTI-OXIDANT</b> Hyperpigmentation & depigmentant	TRX Glutathione 600	2 ml 3 ml
<b>REPAIRING</b> Hyperpigmentation & depigmentant	TRX Sodium Pyruvate	2 ml 2 ml
<b>RESTORING</b> Hyperpigmentation & depigmentant	TRX Glycolic Acid	2 ml 2 ml

<b>ANTI-OXIDANT</b> Hyperpigmentation & depigmentant	TRX Vitamin C Glutathione 600	2 ml 1 ml 2 ml
<b>HYDRATING &amp; RESTRUCTURING</b> Hyperpigmentation & depigmentant	TRX BCN Base	2 ml 3 ml
<b>ANTI-INFLAMMATORY</b> Hyperpigmentation & depigmentant	TRX Dexpanthenol	2 ml 3 ml
<b>ENLIGHTENING</b> Hyperpigmentation & depigmentant	TRX Vitamin C	2 ml 3 ml

## DETAILED INFORMATION

### SKIN HYPERPIGMENTATION

Hyperpigmentation appears when an excess of melanin is produced in the skin, which is what gives rise to spots on the skin.

In general, most pigment spots are caused by excessive exposure to the sun, although there are other factors that can cause them, such as hormonal changes (for example, melasma or chloasma), taking certain medicines, etc.

They can also be the result of some type of trauma, either from a cosmetic procedure, such as laser, chemical peels, or from juvenile acne, which can even cause a lesion. These are post-inflammatory lesions.

- **Melanotic:** There is a normal number of melanocytes and an increase in the pigment of the melanocyte. Some aesthetic pathologies:

#### **Ephelides** (freckles)

In most cases these are genetic, and typically appear in the parts of the body most exposed to the sun (phototypes I and II). Melanin increases, although the melanocytes are normal.

#### **Solar lentigo:**

They are hyperpigmentations with a flat, round shape, very small and with a shade between yellowish and dark brown, sometimes even black. They are produced by excess production in the synthesis of melanin. They are located in areas exposed to the sun. They are stimulated by UV radiation.

#### **Melasma**

There is an increase in melanin as the number of melanocytes increases. It is usually located in the forehead/nose, cheeks, nose and lower jaw. It is usually caused by a hormonal factor such as pregnancy (second month), estrogens and progestogens, ovarian dysfunction and thyroid dysfunction, along with solar radiation. Melasma is aggravated by exposure to the sun.

- **Melanocytic:** When there is an increase in the number of melanocytes. For example:

#### **Senile lentigo**

These are small dark yellow spots that tend towards brown. They appear in large numbers from an adult age, and specifically on the hands and wrists.

**Non-melanocytic:**

These are caused by different factors such as tattoos, drugs (minocycline), metals (silver salts), etc. They are produced by a reaction of the skin with solar radiation (especially UV rays) when it comes into contact with areas of the skin exposed to these substances.

**Post-inflammatory hyperchromia:**

An acute or chronic inflammation then occurs; for example: eczema, acne, skin trauma of various origins.

**Endogenous imperfections of vascular origin:**

Couperose, rosacea, dilated capillaries or congestive skin...

## WRINKLES DUE TO DRY SKIN

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In mature skin or skin that for whatever reason is very dry, the cutaneous barrier is weakened and the value of the transepidermal water loss (TWEL) is increased. This lack of water retention results in skin irritation, itching, as well as the appearance of some aesthetic pathologies and wrinkles. The latter effect involves an increase in mast-cell proliferation and tryptase and a decrease in type I collagen synthesis.

Tranexamic acid, a derivative of the amino acid lysine, is a hemostatic. It works by inhibiting the binding of plasminogen and plasmin to fibrin, preventing the lysis of the latter and therefore promoting coagulation. That is why it is used for the treatment and prophylaxis of bleeding disorders, usually orally.

## TRANEXAMIC ACID ACTIONS ON SKIN HYPERPIGMENTATION AND OTHER ACTIONS

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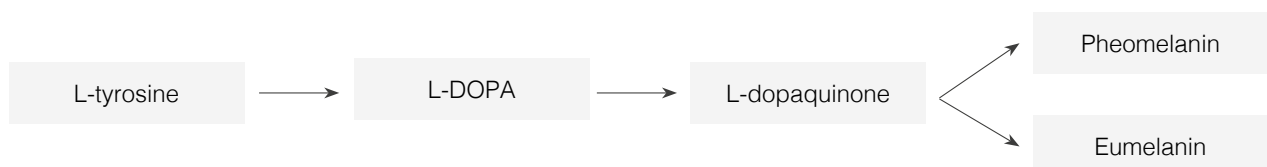
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But it also has other clear and powerful effects on the skin because of its action at different levels:

1. Tyrosinase inhibition
2. Plasmin inhibition
3. Inhibition of vascular factors
4. Other actions of this active ingredient

### 1. Tyrosinase inhibition

The synthesis of melanin takes place in the melanosome, a specialised intracellular organelle that, during the process of its biogenesis, acquires the enzyme tyrosinase and its related proteins, involved in the synthesis of melanin. The formation of melanin is therefore a process dependent on this enzyme:

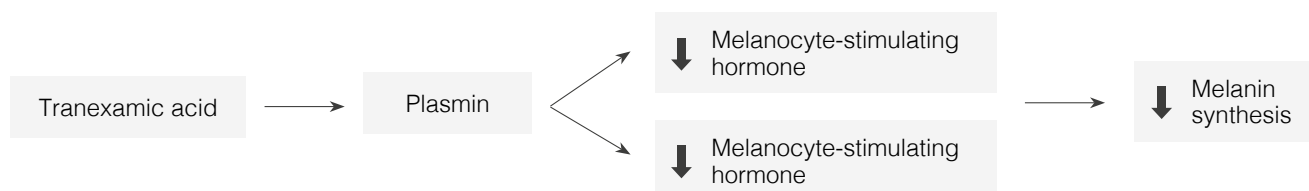


Tranexamic acid **decreases the tyrosinase** activity of melanocytes by preventing the binding of plasminogen to keratinocytes, causing a reduction in prostaglandins and arachidonic acid, which are inflammatory mediators involved in melanogenesis.

## 2. Plasmin inhibition

Plasmin (the synthesis of which is also stimulated by UV radiation, pregnancy, oral contraceptives, etc.) is known to lead to the production of arachidonic acid and the release of fibroblast growth factor (itself a effective stimulator of the growth of melanocytes, which produce the pigment melanin).

Tranexamic acid also **inhibits the binding of plasminogen to keratinocytes** (superficial cells of the epidermis). This, in turn, reduces the formation of arachidonic acid, which translates into a decrease in inflammatory mediators (prostaglandins and leukotrienes) and this reduction results in an inhibitory effect of the enzyme tyrosinase that regulates the formation of the pigment melanin.



**These two actions are those that allow the elimination and prevention of hyperpigmentations, such as melasma, senile spots, ephelides or freckles, etc.**

## 3. Inhibition of vascular factors (VEGF)

Tranexamic acid reduces the expression of the vascular endothelial growth factor (VEGF) and endothelin-1 (ET-1), providing an antiangiogenic effect. It is a mechanism capable of inhibiting vascular factors, which translates into an action on the cells of the blood vessels. *In this way it works* **by reducing the excessive vascularisation characteristic of some hyperpigmentation: couperose, rosacea, dilated capillaries or congestive skin, etc., even intervening in its prophylaxis, as is the case of hereditary angioedema.**

## 4. Other actions:

- Tranexamic acid is capable of chelating iron in hemosiderin, so it can be used in some types of hyperchromia such as **bleaching dark circles**.
- Tranexamic acid **improves wrinkles** that form as a result of dry skin.

The mechanism that gives rise to this effect is a decrease in mast-cell proliferation and an increase in fibroblasts. These two actions affect the increase in the synthesis of type I collagen, which is reduced in dry skin and therefore combats wrinkles and fine lines that develop for this reason.