



KERACTIVE



KERACTIVE is a local treatment for non-androgenic alopecia. It helps to restore effective micro-circulation in the scalp to revitalize the follicles. Being rich in B-group vitamins, in sulfur amino acids and in zinc, it effectively combats hair loss. The presence of DOPA, a melanin precursor, attenuates graying.

KER1: 4 bottles of 5.0 ml
KER2: 12 bottles of 5.0 ml

Indications

KERACTIVE can be used preventively and for hair treatment in the following cases:

- Treatment of non-androgenic alopecia
- Repair of hair previously damaged by internal and external aggressions (medication, malnutrition, sun, pollution, etc.)
- Stimulation of hair growth
- Treatment of hair loss in women
- Treatment of fine or devitalized hair
- Elimination of dandruff and seborrhea
- Creation of a healthy environment for hair grafts

Contra-indications

The contra-indications of **KERACTIVE** are the same as for mesotherapy:

- Skin infections
- Herpes
- Cancer
- Psoriasis
- Auto-immune diseases

In other cases, each patient should be assessed individually with the proposal of deferring treatment as applies. This is especially the case for:

- Pregnancy
- On-going allergic bouts
- On-going anticoagulant treatment

Side effects

There are few side-effects in mesotherapy. In most cases, they are minor and reversible:

- Allergies: procaine is the agent most often involved in the appearance of any allergy. No clear cases of allergic shock have however been recorded in the course of treatment by mesotherapy. The possible reactions described are mainly rashes which disappear in 2 to 3 days. Any allergic reaction noted in a patient should however result in

the immediate stoppage of the treatment. The other compounds used (vitamins, mineral salts, amino acids) do not present any related allergenic risk.

- Pain: this depends on uncontrollable factors such as individual sensitivity, the sensitivity of the area to be treated and the depth of the injection. It also depends on certain factors that can be taken into account and improved:
 - the technique: the injection must be fast and precise,
 - the equipment: the pistol and the needles must be of good quality and the needles must be regularly changed during the session.
- Infections: infections are always possible once the skin barrier has been broken. They can easily be avoided by observing a few simple rules:
 - use of top quality products offering all the necessary guarantees of sterility,
 - use of sterile, disposable equipment,
 - careful disinfection of the areas to be treated,
 - advice given to patients on hygiene.
- Hematoma: this is the most frequent side-effect despite all the precautions taken. It can however easily be masked by suitable make-up and disappears within 2 or 3 days after treatment.

Protocols

KERACTIVE can be injected manually or with a pistol. For manual application, a 1 ml, insulin type syringe is recommended as enabling a better quantification of the product and a reduction in the injection flow rate, thus making the injection less painful.

KERACTIVE should be injected at the level of the intradermis (at a depth of 2 mm) using the papule technique. The recommended frequency of sessions is 1 a week. It is best to start by an aggressive treatment of 1 month with 4 to 5 sessions. The treatment can subsequently be continued depending on the results obtained and on patient demand. Nevertheless, it must not be forgotten that the effect, although long-lasting, does fade with time. It is therefore wise to recommend maintenance treatment at the rate of approximately one session a month.

- Equipment:
 - 1 to 2 ml of **KERACTIVE** depending on the area of the zone to be treated
 - One 1 ml syringe (manual method) or 1 syringe of 2 to 5 ml (pistol method)
 - One 30G x 1/2" needle
 - One 18G x 1 1/2" needle
- Mode of operation:
 1. Place the patient in the sitting position.
 2. Draw up the required quantity of **KERACTIVE** into the syringe with the 18G x 1 1/2" needle.
 3. As required, fit the syringe in the pistol and connect the 30G x 1/2" needle to the syringe.
 4. Start injecting the **KERACTIVE**, with 0.1 to 0.2 ml per injection in successive lines 1 cm apart with 1 cm between each point. With the manual method, position the needle at a tangent to the skin given its thinness over the scalp.

Note: it is not always possible to thoroughly disinfect the area to be treated; however, the scalp is recognized as being particularly resistant to infection.



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KERACTIVE

The biostimulation treatment of hair follicles

■ Dermal papilla and cycle of hair production

Hair is extremely complex, consisting morphologically of several different cells and chemical species (**Fig. 1**). The hair root lies below the surface of the skin enclosed within a **hair follicle** which is in turn entirely encased in connective tissue and acts as the **hair producing unit**. The core of any hair follicle is the hair fiber, composed of three different types of epithelial cells: medullary, cortical and cuticular. The medulla, or innermost layer, is only present in large thick hair. The Inner Root Sheath (IRS) surrounding the hair fiber is composed of three cell types: the inner root sheath cuticle, Huxley's layer, and Henle's layer. This IRS is surrounded by another cellular envelope known as the Outer Root Sheath (ORS). These cells are in contact with the **dermal papilla** situated at the base of the hair follicle.

The dermal papilla is fed by the bloodstream, which carries nutrients to produce new hair, and plays an essential role in the induction and maintenance of hair growth.

Under normal circumstances, hair growth in each **hair follicle** follows a cycle consisting of three main stages (**Fig. 2**): anagen (growing phase), catagen (transition or rapid involution phase) and telogen (resting phase).

Normally, this cycle of hair production and inactivity will continue for the duration of the individual's life. **Other factors can, however, influence and inhibit hair production by aberrant hair follicle cycling and changes in the hair follicle morphology**, leading in some cases to the physical destruction of the hair follicle. Pattern baldness or androgenic alopecia is the result of genetic programming for permanent hair loss, whereas increased hair shedding, or temporary hair loss, can have many different causes: poor nutrition and diet, hormones, age, medication, infections, stress, use of chemicals, rapid weight loss, illnesses, disease, hair-care practices, etc.

KERACTIVE reaches the hair at its root and in particular at the dermal papilla which is vital for the development of hair follicles. The formulation of **KERACTIVE** has been designed to stimulate new hair growth by rejuvenating damaged hair follicles and to create a healthy environment for new hair to grow.

The ideal companion
for hair grafts

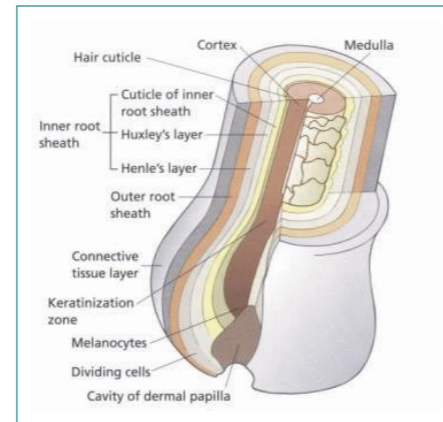


Fig. 1: Structure of the hair bulb

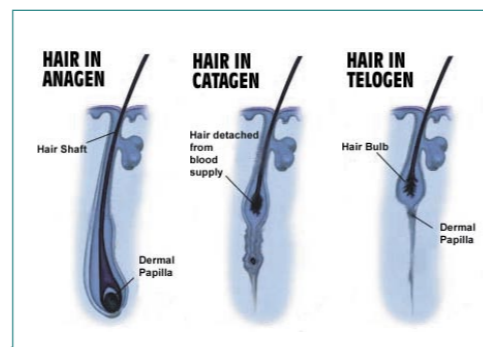


Fig. 2: Hair growth cycle

■ Indications

KERACTIVE is particularly recommended:

- To treat non-androgenic alopecia
- To repair hair prematurely damaged by environmental aggressions (sun, pollution, diet, medication, etc...)
- To stimulate hair growth and health
- To treat female hair loss
- To eliminate dandruff and seborrhea
- To create a healthy environment for hair transplants
- To treat thin and/or devitalized hair



■ Properties

Under the influence of the dermal papilla, differentiation of the epidermal cells during the anagen stage produces a hair fiber and associated products. Insufficient dermal papilla cell stimulation results in a stoppage of the growth of the hair fiber and root sheaths. The dermal papilla can become isolated in the dermis and the hair fiber can easily be pulled out leading to hair loss. **KERACTIVE slows down this process by providing the dermal papilla with the nutritional elements required for hair growth.**

The primary component of hair fiber is keratin protein, a long chain of amino acids that forms the cytoskeleton of all epidermal cells. Research has evidenced that the durability and resistance of hair fiber to degradation under environmental stress stem from the high amount of sulfur which comes from the amino acid, cysteine, in the hair fiber. The sulfur in the cysteine molecules in adjacent keratin proteins binds to form disulfide chemical bonds which are very strong and very difficult to break apart. **KERACTIVE**, by ensuring a permanent bio-availability and a proper ratio of all the **amino acids** present in healthy hair, **optimizes the production of keratin proteins.**

The cells in hair follicles produce all the keratin they require from the nutrients supplied by the blood vessels of the dermal papilla (**Fig. 3**). Any reduction in the blood and oxygen supply to the scalp results in increased hair shedding, damaged hair and slow regrowth.

It is therefore essential to restore an efficient micro-circulation in order to enhance or re-establish the phenomena of tissue exchange which ensures good dermal papilla function. Thanks to the vasodilator activity of the **PTMBP** (4-(1-Pyrrolidiny)-1-(2,4,6-trimethoxyphenyl)-1-butanone), also called **buflomedil**, **KERACTIVE** helps to increase blood flow and therefore to irrigate and oxygenate the scalp. Derivatives of the flavonoides such as **rutin** offer a particularly **beneficial vasculo-protective effect** in that respect. They increase the resistance of the capillaries directly by stabilizing the vascular basal membrane and indirectly by increasing the uptake of free radicals.

KERACTIVE also contains all the metabolites (vitamins and minerals) required for proper functioning of the nutritional and energetic metabolism. **KERACTIVE** is particularly rich in **vitamin B** which (especially when combined with zinc) prevents hair shedding and regulates sebum secretion and dandruff caused by the build up of cellular debris which asphyxiates the hair follicles. Graying is also attenuated by Vitamin B and by **DOPA**, a melanin precursor.

Minerals (**zinc, selenium, copper, manganese**) known for their anti-oxidant properties and their role in enzymatic reactions leading to hair growth and repair are also brought by **KERACTIVE**.

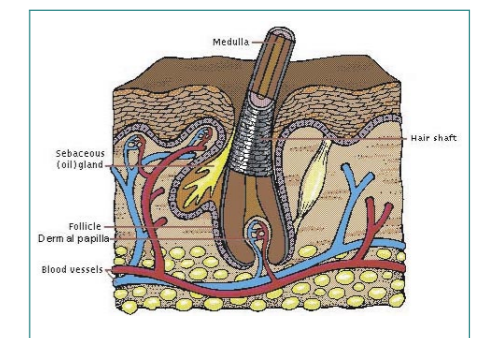


Fig. 3: Bloodstream in the dermal papilla

