

Key active ingredients:

- Plant stem cells - 1%
- Diaminopyrimidine oxide (an alternative to minoxidil) - 1%
- Callus culture extract of Leontopodium Alpinum (Edelweiss) - 1%
- Aloe vera vesicles - 2%

Scalp aging and hair loss:

Baldness and other hair abnormalities can most often result from the following causes:

1. Loss of collagen in the hair follicles, due to aging
2. Loss of capillaries in the scalp, reducing the supply of oxygen and nutrients to the hair follicles
3. Reduced follicle size and increased oil production, caused by the hormone DHT
4. Reduced ability of the scalp to regenerate and heal, due to violation of the skin barrier

The main ingredient

Exosomes are small extracellular vesicles, about 100 nanometers in size.

They are the most important mechanism in intercellular communication in our body. Acting as messengers, they deliver lipids, proteins and RNA that activate biological responses in the receiving cells.

Benefits of exosomes:**1. Anti-inflammatory effects**

Exosomes play a major role in alleviating inflammation by transporting the enzymes needed to produce extracellular adenosine, a potent anti-inflammatory agent that regulates immune activity and subsequently prevents excessive inflammation of the scalp and hair follicles.

2 Stimulation of structural elements of the skin barrier

Exosomes promote the synthesis of key components of the skin barrier - sphingolipids. These are essential epidermal molecules that intervene in the modulation of our skin cells. They participate in ceramide production, keratinocyte proliferation and differentiation, as well as in the production of the key immune element of the epidermis (cAMP), maintaining the health of the skin barrier.

Active ingredients

- Biotinyltripeptide-1

Biotinotriptide-1 is a three-amino acid peptide that combines the famous collagen fragment, GHK, with biotin, a well-known hair and nail strengthening supplement. The resulting biotinylotriptide-1 has shown an effect on hair regrowth comparable to minoxidil.

Benefits of biotinylotriptide-1**1. Activation of hair cells**

Promotes the proliferation of keratinocytes at the base of hair follicles and helps optimally anchor hair by stimulating the synthesis of the adhesion molecules laminin 5 and collagen IV. This results in stronger hair that stays in place longer.

2. Stimulation of gene expression

Stimulates the expression of the Ki-67 gene, a proliferation marker protein associated with cell proliferation, as well as tissue regeneration, promoting the recovery of damaged hair follicles.

3. Regulates hair cell metabolism

Promotes scalp microcirculation and stimulates cell communication, improving oxygen and nutrient supply to hair follicles. This reduces hair follicle atrophy and signs of scalp aging.

- Copper tripeptide-1

Copper tripeptide-1 (GHK-Cu) is a copper-peptide complex found naturally in body fluids such as plasma and saliva. Since copper deficiency is one of the causes of signs of aging skin and thinning hair, this tripeptide is fast becoming a popular ingredient in hair and scalp treatments.

Benefits of using copper-1 tripeptide

1. Enlargement of hair follicles

During a study of GHK-Cu's wound healing-stimulating properties, follicles in the area were found to be enlarged, which ultimately led to the discovery that copper peptides stimulate hair growth by stimulating follicle cell proliferation, resulting in larger follicles that produce longer and thicker hair.

Regulation of the hair growth cycle

Copper peptides stimulate and lengthen the hair growth phase (anagen), giving hair more time to actively grow back and become thicker. They are also involved in shortening the inactive phase of the hair follicle (telogen), reducing hair loss and preventing premature follicle death.

3. Inhibition of the hormone DHT

Dihydrotestosterone (DHT), a hormone converted from testosterone, is the main cause of androgenic hair loss. DHT is converted thanks to an enzyme known as 5-alpha reductase, which has been shown to be blocked by peptides. Thus, copper peptides block DHT production and prevent further hair loss.

Polypeptides

1. sh-polypeptide-1 (FGF2)

A synthesized copy of the human gene encoding basic fibroblast growth factor (FGF2). Stimulates the growth and proliferation of fibroblast and keratinocyte cells, as well as the synthesis of collagen and other extracellular matrix components, promoting skin barrier health.

2. sh-polypeptide-4 (SCF)

A synthesized copy of the human gene encoding stem cell factor (SCF). Plays an important role in the production of blood cells and melanocytes, regulating melanocyte survival and proliferation in adults to maintain proper pigment transport (preventing gray hair).

3. sh-polypeptide-12 (NOG)

A synthesized copy of the human gene encoding the Noggin (NOG) protein. Noggin is a signaling molecule that plays a role in tissue development and the derivation of specialized cells. Studies show that Noggin signaling is required for the induction of the growth phase of hair follicles (anagen).

2xosome isolation technology:

The conventional method for isolating and purifying exosomes has been ultracentrifugation.

However, there is always some degree of exosome destruction with this method.

For this reason, Hairna Hair Fill's exosomes are isolated using 2xosome, a new filtration technology that successfully preserves the quality of each individual exosome.