

## anageline®

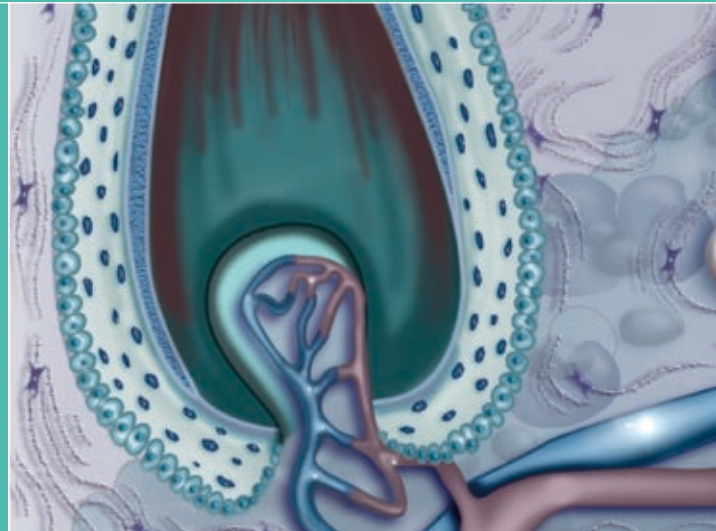
Growth phase of hair stimulation:  
an anti-hair loss strategy

In order to restart the hair cycle and combat alopecia, it is necessary to activate the anagen, or growth phase of hair. SILAB has thus developed anageline®, an active ingredient that acts simultaneously on the three principal factors that control the hair cycle: hormonal balance, the vascular system and cell metabolism.

- ✓ anageline® inhibits the activity of 5 $\alpha$ -reductase II, limiting the transformation of testosterone into 5 $\alpha$ -DHT, a hormone responsible for androgenetic alopecia.
- ✓ anageline® increases vascular density around the hair follicle, facilitating the supply of oxygen and nutrients required for hair development.
- ✓ anageline® stimulates the differentiation capacity of cells in the hair bulb and favors the keratinization necessary to hair growth.

Tested *in vivo*, anageline® reduces hair loss and increases hair density.

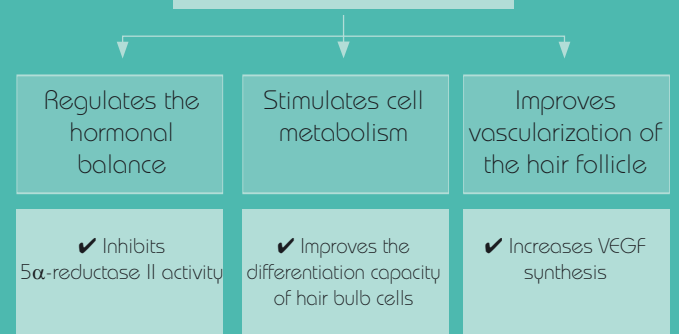
A genuine nutritive and revitalizing cocktail for the bulb and hair, anageline® is recommended in all hair treatment formulations destined to delay or to slow hair loss.



Hélène Fournié®

## anageline®

Rich in peptides,  
trace elements  
and vitamins



Improves the microcirculation of the scalp  
Hair density returns to normal

**ANTI-HAIR LOSS ACTIVITY**

## anageline® slows hair loss

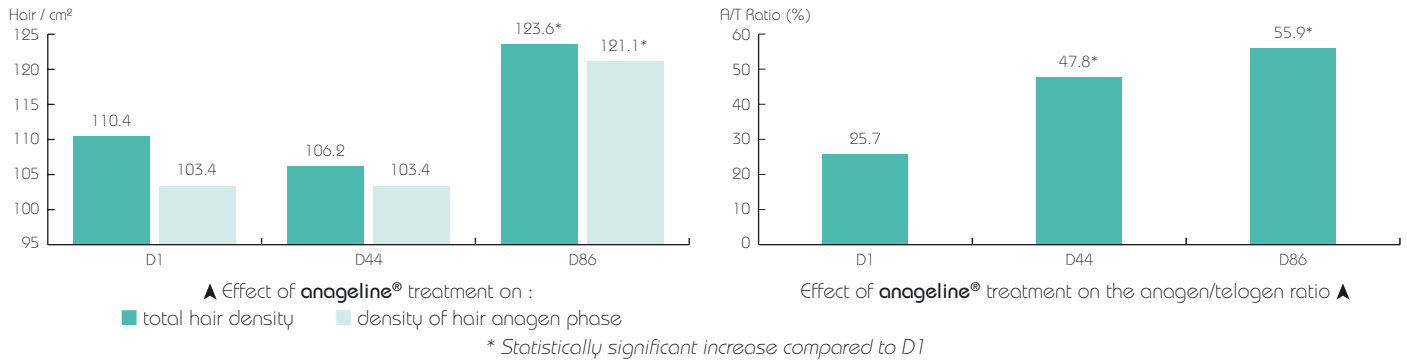
### Anti-hair loss effect

#### ✓ Phototrichogram method

16 male volunteers between 18 and 65 years of age with slight to moderate baldness

The aim of this study was to determine the action of **anageline®** tested at 10% in a lotion on reducing the rate of excessive hair loss.

After 12 weeks of treating balding subjects with **anageline®**, the hair density and the anagen/telogen ratio both stabilized, showing a significant action on reducing hair loss (see figures below).



## anageline® favors vascularization of the hair follicle

### Effect on the synthesis of VEGF (vascular endothelial growth factor)

#### ✓ ELISA assay

Tested at 0.5% on human keratinocytes, **anageline®** leads to a 30% increase in the synthesis of VEGF, a growth factor involved in the formation of the vascular system.

### Effect on angiogenesis

Angiogenesis is a process involving the formation of new vessels from preexisting vessels. A study conducted on endothelial cells involved the immunolabeling visualization of ramifications and tubular structures of new vessels formed in presence of **anageline®**. Tested at 0.25%, 0.5% and 1%, **anageline®** increases the formation of new vessels from preexisting vessels (see photos below).



Control



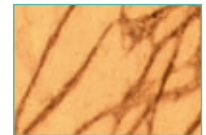
VEGF



0.25% anageline®



0.5% anageline®



1% anageline®

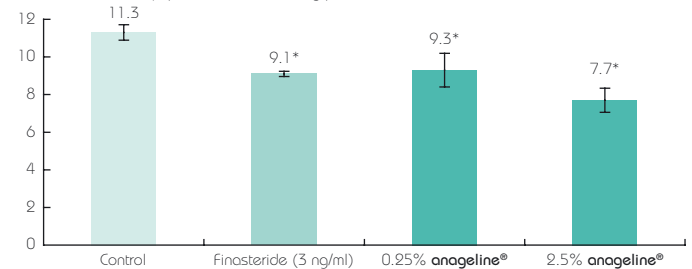
## anageline® restores the hormonal balance

**anageline®** reestablishes the hormonal balance by inhibiting the activity of 5 $\alpha$ -reductase II. This enzyme catalyzes the hydroxylation of testosterone to form 5 $\alpha$ -DHT (5 $\alpha$ -dihydrotestosterone), a molecule involved in the miniaturization of hair follicles, characteristic of androgenetic alopecia.

### Effect on the activity of 5 $\alpha$ -reductase II

Tested at 0.25% on human fibroblasts, **anageline®** exhibits a significant inhibitory effect towards 5 $\alpha$ -reductase II activity (-18%). This effect is comparable to that of a reference molecule, finasteride (see figure opposite).

5 $\alpha$ -reductase II activity (pmol DHT formed/h/mg proteins)



Effect of **anageline®** on 5 $\alpha$ -reductase II activity ►

\*significant result according to Student's test (P<0.05)

## anageline® stimulates cell metabolism

### Measurement of the differentiation capacity of keratinocytes

The differentiation capacity of hair bulb cells is directly correlated with hair growth. A study realized on keratinocytes with RT-PCR method enabled the effect of **anageline®** on the expression of mRNA coding for type 1 transglutaminase, a marker of keratinocyte differentiation to be determined. At 1%, **anageline®** stimulates the expression of mRNA coding for type 1 transglutaminase by 44%.

• **Latin name:** *Lupinus Albus*

• **I.N.C.I. name:** Hydrolyzed Lupine Protein

• **Cas N°:** 84082-55-3

#### Form

- Aqueous solution
- Aspect: limpid
- Odor: characteristic
- Color: amber

#### Analytical features

- Dry matter: 180 - 250 g/l
- Proteins (Biuret method): 90 - 150 g/l
- pH: 7.5 - 8.5
- Preservatives: 0.36 % phenoxethanol, 0.14 % parabens

#### Bacteriology

- Steril product
- No yeast and mould present
- No pathogenic germs present

#### Packaging

Sterile 1 and/or 5 liters plastic container

#### Storage

Store preferably at 20°C and in a dark place

#### Use

- Fully soluble in aqueous medium
- Solubility in ethanol: soluble up to 50/50 ethanol/water (V/V)
- Can withstand temperatures up to 80°C for at least two hours
- Stable between pH 2 and pH 10
- Recommended amount: 1 to 10%

#### Innocuousness

- ✓ Evaluation of skin safety on human volunteers: Non irritating
- ✓ No mutagenicity according to the Ames test
- ✓ Non phototoxicity
- ✓ Non cytotoxicity
- ✓ Evaluation of sensitizing capacity *in vivo* on human volunteers: Hypoallergenic (Marzulli-Maibach method)