PROVITAL GROUP
For a beautiful life from cells to the skin
Baicapil™
Stimulates hair growth and prevents hair loss
» Hair loss

› Hair is a symbol of health, beauty and personality.
› The loss of 50 to 150 hairs per day is a consequence of a healthy hair cycle.
› However, when this cycle is altered, the known baldness appears:
   • It directly influences our character and mood.
   • It may diminish self-confidence and self-esteem.
   • It causes an aged and unattractive appearance.

Hair loss is one of the main concerns regarding personal appearance
Hair cycle

Each hair follicle is constantly subjected to cycles, which consist of three stages:

1. **Anagen**: growth and formation of the hair shaft.
   - Duration: 2 – 8 years.
   - 85-90% of the hair follicles are in anagen phase.

2. **Catagen**: interruption of hair growth and regression of the follicle.
   - Duration: 2 – 3 weeks.
   - 1 – 2% of the hair follicles are in catagen phase.

3. **Telogen**: resting state of the hair follicle.
   - Duration: 2 – 4 months.
   - 5 – 15% of the hair follicles are in telogen phase.
Hair loss decrease

- **Baicapil™**, innovative anti-hair loss active ingredient, counteracts the causes of hair loss:
  - Maintains a long anagen and a short telogen phase.
    - Gently changes hair cycle from telogen to anagen phase.
    - Improves the condition of the follicular cells and its microenvironment, to maintain the balance between anagen and telogen phases.

*Baicapil™* is a combination of three botanical active ingredients that acts to visibly combat hair loss, stimulate hair growth and increase its density.
**Baicapil™ composition**

- **Scutellaria baicalensis**
  - Source of baicalin, the active molecule.
  - Asian origin, used in traditional Chinese medicine.

- **Soy (Glycine max.) and wheat (Triticum vulgare) sprouts**
  - Sprouts are obtained from the seeds of soybean and wheat.
  - Rich in reserve substances, such as carbohydrates.

- **Protects from oxidative damage.**
- **Activates stem cells.**
- **Delays senescence.**
- **Increases cell proliferation.**
- **Enhances the metabolic activity of the cells.**
» In vitro efficacy

Several tests were conducted to evaluate the *in vitro* efficacy of *Baicapil™*:

1. **Soy and wheat sprouts: oxygen consumption**
   - Mitochondrial model.
   - Model of human skin fibroblasts.

2. **Baicalin: senescence in primary human fibroblasts**
   - TERT activation.
   - Effect on cellular senescence.
» Sprouts *in vitro* efficacy: oxygen consumption

- **Mitochondrial culture**
  
  Mitochondrial activity increases as the concentration of sprouts (ppm) is increased.

- **Human skin fibroblasts culture**
  
  Mitochondrial activity of fibroblasts increases due to the application of sprouts.

**Wheat and soy sprouts enhance cellular activity**
» Baicalin *in vitro* efficacy: senescence

- **TERT activation**

  Baicalin activates TERT in primary fibroblasts, after cultivating them during 24h.

  *TERT (Telomerase reverse transcriptase) is one of the characteristic proteins of stem cells and progenitor cells, essential for their activation and functioning.*

- **Cellular senescence**

  It was shown that baicalin has the ability of delaying senescence of human fibroblasts since it increases their number of duplications by 10%.

Baicalin delays cellular senescence
Hair loss and regenerative efficacy of *Baicapil™* was evaluated through:

- Hair lotion containing 3% of *Baicapil™* against another lotion without active (placebo).
- 61 volunteers (men and women) with Mediterranean Caucasian hair, aged 18-60.
- 30 volunteers treated with placebo and 31 with *Baicapil™* for 6 months.
- The measurements were at D0 and D180.
- Additionally, the test of hair washing and combing was also measured at D90.

The final formula of *Baicapil™* contains arginine, used as a stabilizer. However, arginine is known for its anti-hair loss efficacy. In this case, it was decided to remove arginine from *Baicapil™* lotion to not falsify the results of our in vivo study.
» *In vivo* study: anagen-telogen ratio

- A/T ratio (microscopic study)

The two extracted follicles were in anagen phase, but after treatment with *Baicapil™* (T180) we observed:

- Stronger activity in the matrix area.
- A good development of hair sheaths (robust and thickened).
- Larger bulb and thicker hair.
» In vivo study: anagen-telogen ratio

• A/T ratio (microscopic study)

The number of follicles in both phases was determined with *Baicapil™* vs. placebo:

- Improvement of **10.7 percentage points in anagen phase** (12.7% *Baicapil™* vs. 2% placebo).

- Improvement of **34.1 percentage point in telogen phase** (-27.2% *Baicapil™* vs. 6.9% placebo).
» *In vivo* study: anagen-telogen ratio

**Baicapil™**

- **A/T ratio** (microscopic study)

*Baicapil™* increases the ratio of anagen/telogen hair from 3.5 to 5.9, a change practically undetectable with placebo.

* A/T≥4 is considered as an indicator of a normal hair condition.

This change means an **increase in A/T ratio of 68.6%**, compared to T0.

**Baicapil™** stimulates hair growth
» **In vivo efficacy: hair density**

- **Density with microcamera**

  Hair density is the number of hairs per unit area (cm²).

  **Baicapil™** increases the density of hair:
  
  - By **18%** compared to T0.

  ![Density vs. T0](chart)

**Baicapil™** increases hair thickness and density, with volumizing effect
In vivo efficacy: hair density

Microphotographies of the scalp

There is a visible increase in the hair thickness and density after Baicapil™:

The photographs show a 22% increase of density (from 182.98 hairs/cm² to 222.75 hairs/cm²)
**In vivo efficacy: hair loss**

- **Washing and combing test**

  **In just 3 months of treatment, Baicapil™ reduces hair loss by 60.6% vs. T0.**

  **% hair loss T90 vs. T0**

  - **PLACEBO**: -37.8%
  - **BAICAPIL™**: -60.6%

  **% hair loss T180 vs. T0**

  - **PLACEBO**: -37.4%
  - **BAICAPIL™**: -50.9%

Even after 6 months, **Baicapil™ continues reducing hair loss (-50.9%).**

*Hair follicle metabolism has adapted to the daily intake of active.

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**Baicapil™** improves the condition of hair follicles and its anchorage in the scalp, thus reducing hair loss.
» *In vivo* efficacy: general condition of the hair

› Photographs of the scalp

There are remarkable improvements in hair density after *Baicapil™* treatment:

*Baicapil™* visibly improves hair quantity and quality
Conclusions

Baicapil™ reduces hair loss, stimulating hair growth and improving its overall condition.

- Reduces hair loss.
- Increases hair growth and its density.
- Improves the quantity and quality of hair.
- Increases cellular activity.
- Protects the follicle from senescence and oxidative stress.
- Lengthens the anagen phase of hair cycle.
- Improves the ratio of hair anagen vs. telogen.
» Cosmetic applications

- Anti-hair loss products.
- Hair care lines: tonics, serums, conditioners, masks, shampoos, etc.
- Hair growth enhancers.
- Anti-aging hair ranges.
» Technical information


- Transparent liquid.

- Dark yellow colour.

- Soluble in aqueous solutions.

- Doses: 2 – 4 %.