

## Anti-ageing hair care

# Preventing hair loss + ensuring fuller hair



photos: Mibelle

New active ingredient reduces hair loss and helps increase hair density

As consumers continue to strive towards being healthy and maintaining good looks as they age, they do not only focus on skin care but also on anti-ageing hair care. Ageing of the hair comprises different aspects: thinning of hair, hair loss, dullness, colour fading and greying are all part of this process. While grey hair has gained acceptance, thinning hair will always be perceived as negative and, therefore, hair care products with anti-hair loss claims are of growing interest to everyone.

## Hair loss due to manifold causes

Hair loss can occur for a variety of reasons, such as infections, thyroid and hormonal imbalances, nutritional deficiencies, stress, trauma, drugs, or it may occur as the result of autoimmune phenomena.

Mibelle Biochemistry has developed RootBioTec HO, a novel anti-hair loss active, which is based on the herb basil and produced with a novel sustainable biotechnology. It tackles the problem of hair loss at the roots, therefore stimulating the proliferating cells in the hair bulb in order to boost hair regrowth and, at the same time, inhibit the hair loss enzyme  $5\alpha$  reductase II. Preventing hair loss in men and women helps users to regain fuller and denser hair.

Many of these hair loss problems are temporary, although there is another type of hair loss that is less dramatic and less visible but can be incredibly distressing. This involves the hair thinning gradually, often over the course of several decades. It can start at any age, it is progressive and it is hereditary. This phenomenon, known as androgenic alopecia, is related to male hormones, but it is not caused by excessive testosterone. It is a genetic predisposition that causes hair follicles to become more sensitive to this hormone. The enzyme  $5\alpha$  reductase converts the male sex hormone testosterone into the active form dihydrotestosterone (DHT). This hormone causes the hair follicles to produce thinner and smaller hair, up to the point that the hairs stop\*.

## Women, too, suffer from androgenic alopecia

Men are considerably more affected by hair loss (statistics suggest up to 70% of men experience hair loss). But it is not only men. Women can also suffer from androgenic alopecia. Approximately 30–40% of women experience hair loss, although androgens are typically present in much smaller amounts. In contrast to men, hair loss in women occurs less in the area of the receding hairline or tonsure, but instead appears on the top side of the head and through the spotty formation of gaps or diffuse hair loss.

## A novel technology to produce basil extract

For the manufacture of the active ingredient RootBioTec HO, Mibelle

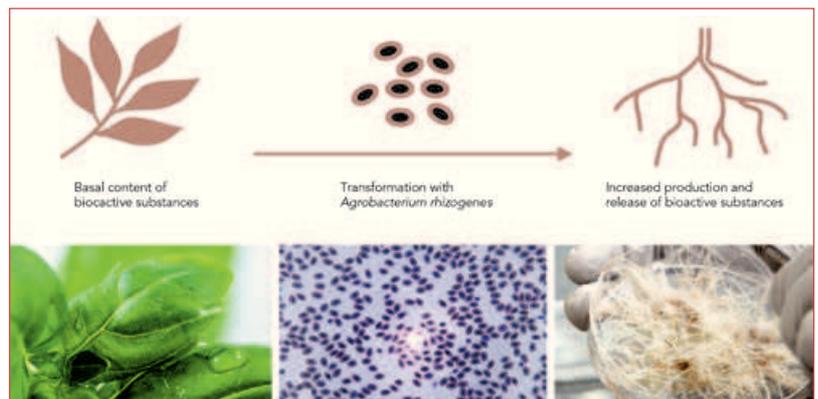


Fig. 1: Thanks to a new technology high quality, phytogetic compounds can be produced under controlled conditions

Biochemistry has developed a novel sustainable technique to produce high amounts of valuable secondary metabolites of basil in bioreactors, the so-called "hairy roots" technology. Basil, the common name for the culinary herb *Ocimum basilicum*, comes from the Greek word *basileus*, which means "King". Considered the "king of herbs" it plays an important role in both Italian and Asian cuisine. Basil contains high concentrations of essential oils and potent antioxidants with anti-ageing, anti-cancer, anti-viral and anti-microbial properties. Due to these valuable components and its medicinal properties it is also used in Ayurveda.

To start culturing it, only a single plant leaf is needed. The plant materi-

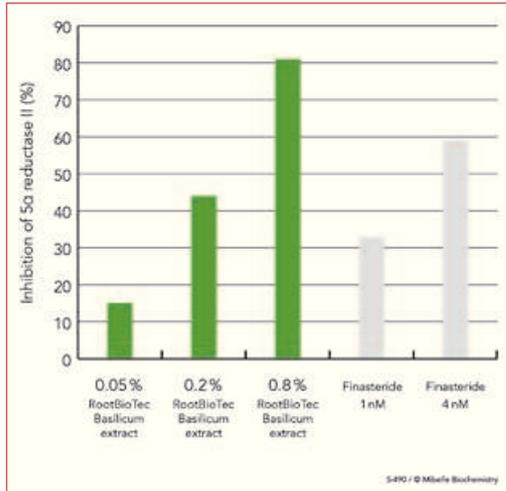


Fig. 2: The active ingredient showed a clear concentration-dependent inhibition of 5α reductase II

hibitor and synthetic drug to treat baldness in men, was used (Fig. 2).

Another study was conducted with human dermal papilla cells. Dermal papilla cells are located at the base of the hair follicle bulb and play an essential role in the control of hair growth. They are involved in regulating the hair growth cycle and the production of hair fibre. The new active ingredient improved the proliferation of these cells by 23%, indicating a hair regrowth effect.

### Proven anti-hair loss effect

The effect of Root BioTec HO against hair loss was evaluated on 19 women and 2 men (aged between 25 and 67) who were suffering from mild to moderate hair loss (daily hair loss >100 strands). The volunteers applied a fluid containing 1% of the ingredient every evening for two months. After one and two months respectively, volunteers collected the hair that was lost as a result of combing on three consecutive days.

The active ingredient showed the capacity to reduce hair loss by 26% after the first month and 31% following the second month\*. These results suggest that it significantly reduces hair loss and thus helps increase hair density.

\*Illustrations as well as additional information can be found on the Internet – see Internet panel

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al is infected with the naturally occurring soil bacterium *Agrobacterium rhizogenes*. This infection then leads to the growth of so-called "hairy roots" which can be cultivated in-vitro (Fig. 1). The white hairy root biomass can then be extracted and dissolved in a carrier in order to prepare the cosmetic active for anti-hair loss formulations. Thanks to this RootBioTec technology high quality, phyto-genic compounds of basil of pharmaceutical value can be produced under controlled conditions.

### 5α reductase inhibition and hair follicle stimulation

5α reductase II is present in hair follicle cells and is the key target enzyme to inhibit hair loss. It catalyzes the reduction of testosterone into the more potent androgen dihydrotestosterone (DHT), which has an affinity to androgen receptors that is two to three times greater. The active ingredient RootBioTec HO showed a clear concentration dependent inhibition of 5α reductase II with an IC value of 2.62 mg/ml. As a positive control Finasteride, an approved 5α reductase in-

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Esther Belser, Mibelle, presents a novel anti-hair loss active produced with a novel sustainable biotechnology

