



REVERSE HAIR GREYING

Rejuvenation | For many consumers, the first grey hairs are the starting point for the use of anti-ageing products. Even in hair care there is an opportunity to stop and even reverse the signs of ageing with the right active ingredients. Petra Schlegel presents promising study results.



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The loss of pigmentation in the hair is one of the most obvious signs of ageing, and a main beauty concern. Depending on predisposition and external influences, it can sometimes begin at a relatively young age. However, we live in a society that is, for the most part, near obsessed with preserving personal youth, in which the norm is to remove any sign of ageing. Not taking advantage of the many opportunities to maintain a youthful appearance is considered to mean not taking care of ourselves. So, the **greying of hair can result in a loss of self-esteem** and other

emotional issues and can therefore affect the personal wellbeing. However, one fact cannot be denied: 23% of individuals that are older than 50 have at least 50% grey hair.

The most common causes of hair greying are **psycho-emotional stress, genetic factors, and pathologies**. In addition, the exposome, which includes both **environmental and behavioural factors**, is known to have harmful health effects. Hair is directly affected by these factors causing premature ageing: dull and brittle hair, hair loss and grey hair.

Triggers and countermeasures

When the first grey hairs appear, many consumers first think of visiting the hairdresser to dye their hair or want to conceal their aged hair at home with over-the-counter products.

These measures only cover the grey hair for a short time and require regular repetitions depending on the intensity and individual aesthetic sensibility. The allergenic potential of the products used must not be disregarded. A fundamental reversal from grey back to naturally pigmented hair would represent an overall more sustainable solution.

Recently there are truly effective **active ingredients available to re-pigment natural hair**, inspired by ayurvedic medicine, acting on different levels, amongst other things.

Counteracting the biological process of hair greying

Depigmented hair produces many reactive oxygen species and is characterised by a decrease of melanogenesis. The physiological hair greying that occurs with ageing is also known to result, in part, from **accumulation of oxidative damage generated during normal metabolism**. It damages cellular structures via the formation of ROS (reactive oxygen species) such as H_2O_2 and superoxide.

Considering the major role of oxidative stress in the occurrence of grey hair, an active ingredient from Asian **Picrorhiza scrophulariiflora** roots titrated in Picoside II, used in Ayurvedic medicine was developed.

Activation of melanogenesis and antioxidant protection mechanisms

In vitro and in vivo investigations revealed a great number of **biological activities, which contribute to the process of hair pigmentation**. Indeed, the results of the in vitro studies showed its capacity to significantly increase melanin synthesis in a co-culture model of normal human epidermal melanocytes and normal human epidermal keratinocytes under basal and oxidative stress conditions.

In vitro results

- **Preservation and reactivation of the natural hair colour:** Existing melanocytes are protected. The active ingredient mentioned above¹ reduces and enhances the expression of antioxidant agents in melanocytes up to 144%.
- **Renewal of melanocytes:** Dermal papilla cells present in the hair follicle bulb play an essential role in the regulation of active melanocyte renewal. The accumulation of intracellular ROS affects their activity. By reducing the production of ROS by 12%, hair pigmentation is improved.
- **Increased melanogenesis:** Tyrosinase is a key enzyme for the biosynthesis pathway of melanin pigment, which is the most important determinant of the colour of skin and hair. Tyrosinase gene expression, promoting melanogenesis is increased.
- **Increased pigmentation:** Ageing is associated with a reduced number of differentiated and functioning hair bulb melanocytes, and decreased tyrosinase activity. Tyrosinase activity and thus the pigmentation process is increased.

Protection against depigmentation

With Picoside II a molecule has been found that targets grey hair and reactivates the pigmentation process in the follicle. The active made of an extract of Asian **Picrorhiza scrophulariiflora** roots acts as a pigmentation booster.

In vivo results

In the following it will be shown how the active ingredient:

- reduces the number of white hairs per square centimetre.
- increases the self-esteem and reduces unpleasant emotions.
- hair health is, according to the volunteers, improved.

In vitro results showed that both melanin synthesis, as well as the expression of antioxidant genes are significantly increased, and oxidative stress is reduced. As a result, after five months 20,000 hairs have regained their colour. ▶

In vivo, the active ingredient was shown to restore natural hair colour (measured by grey hair density). In addition, it significantly increases self-esteem and modulates emotional valence by significantly reducing unpleasant emotions.

Decrease of white hair density and proportion

A double-blind, placebo-controlled study on 44 male and female subjects showed that twice-daily application of a leave-on formulation containing 1% of the active ingredient shows a significant reduction of the density of grey hairs per square centimetre:

- After 2.5 months the density of white hair is reduced by 16% after 5 months by 19% (figure 1).
- The proportion of white hair is decreased up to 37%². In average (9% in 2.5 months) and 15% less in 5 months (figure 2). Progressive and long-lasting results

After five months a visible and significant hair re-pigmentation is induced. The active ingredient stimulates the natural pigmentation process to restore a natural hair colour in both men and women.

During self-evaluation, especially women expressed their satisfaction. 80% of the women reported a good effect regarding the proportion of white hair and its re-pigmentation.

In addition to visible effects of cosmetics in general new studies show, that consumers expect the cosmetics industry to make them feel better, not just look better. Three quarters of the respondents agreed with this statement³.

In this light also the emotional effect of the re-pigmentation of hair was evaluated. It could be shown, that the active significantly increases self-esteem and modulates the emotional valence, by significantly decreasing unpleasant emotions.

Conclusion

The active ingredient from Asian *Picrorhiza scrophulariiflora* roots constitutes a new natural solution for hair greying. By acting on hair

pigmentation, the hair regains its health and beauty.

For example, it can be used in anti-grey hair lotion, anti-white hair shampoo, natural re-pigmentation hair mask, anti-grey hair for beard, hair colour regeneration spray and gel for premature grey / white hair, etc. It can be produced China

compliant, vegan suitable and Cosmos authorised.

References:

- 1 Acrollys
- 2 Volunteer #23: -37.1 white hair/square centimetre after five months.
- 3 Unilever Positive Beauty study with 10,000 respondents

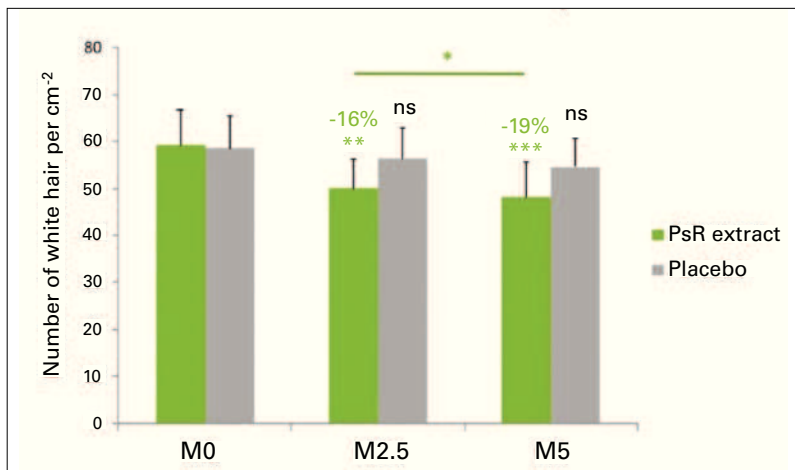


figure 1: Evolution of number of white hairs per square centimetre during the experimentation (Mean ± SD). **p<0.01, ***p<0.001 ns: not significant vs M0, #p<0.05 vs M2.5.

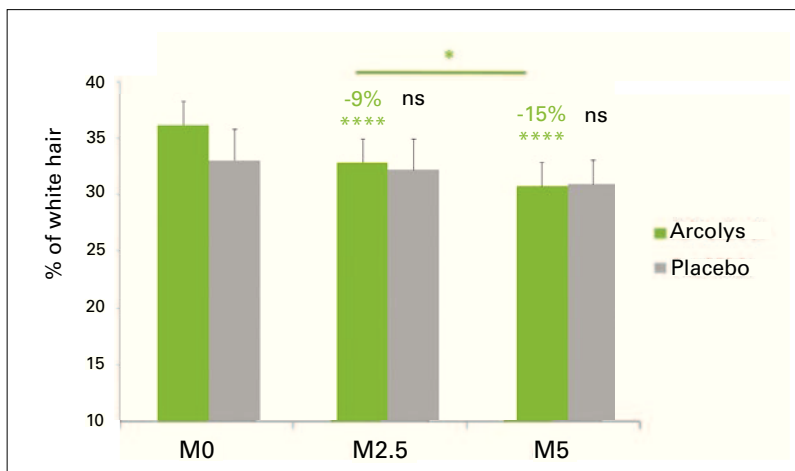


figure 2:**** p=0.0001 vs M0 ** p<0.01 ns: not significant



A reduction in the proportion of grey hair per square centimetre by more than three times can be seen. Example Subject #23: over 20,000 hairs have regained their natural hair colour. (Pictures from left to right: M0, M2,5, M5)

figures: Greentech