

## Hair cycle balancer

### Intended use

Active for hair and scalp care

### Benefits at a glance

- Prevents hair loss
- Rebalances the life cycle of hair
- Improves general scalp health and hair quality
- Promotes formation of building blocks for hair and scalp
- Usage concentration: 0.1 – 0.5%

### INCI (PCPC name)

Sphinganine

#### Chemical and physical properties (not part of specifications)

Form	White to off-white powder
Melting range	73 – 84 °C

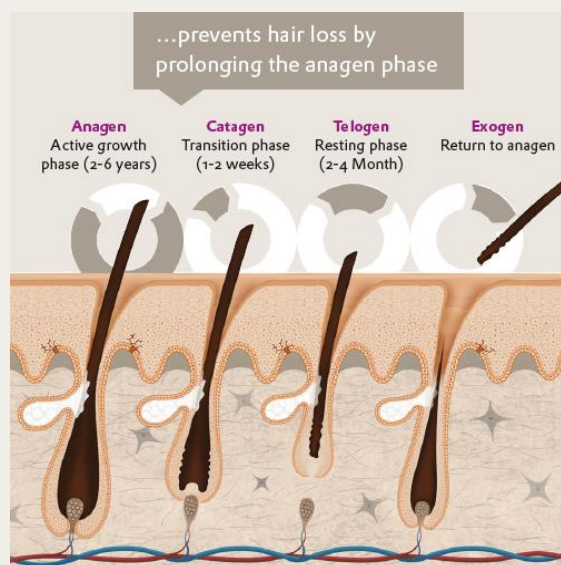
### Introduction

The appearance of hair is one of the first impressions of a person. With aging and under other circumstances, like e.g. androgenic alopecia, miniaturization of the hair follicle occurs and the anagen phase is shortened, resulting in hair loss and formation of fine and lifeless hair.

To prevent hair loss, healthy hair embedded in a healthy scalp is essential.

SPHINGONY® is the trade name for Sphinganine, a naturally occurring, skin-identical sphingoid base. It is produced by fermentation of a unique yeast strain, ensuring that Sphinganine features the same stereochemical configuration as found in nature and in human skin. The skin-identical stereochemistry of Sphinganine is of key importance for its biological functions.

SPHINGONY® addresses hair loss by balancing the hair life cycle, strengthening the hair follicle and improving scalp health (Figure 1).



**Figure 1a:** Working mechanism of SPHINGONY® within the hair life cycle.



**Figure 1b:** Working mechanism of SPHINGONY® within the hair follicle and on the scalp.

## Hair quality and scalp health improving effects of SPHINGONY®

### *In vivo* study on men (combined study data)

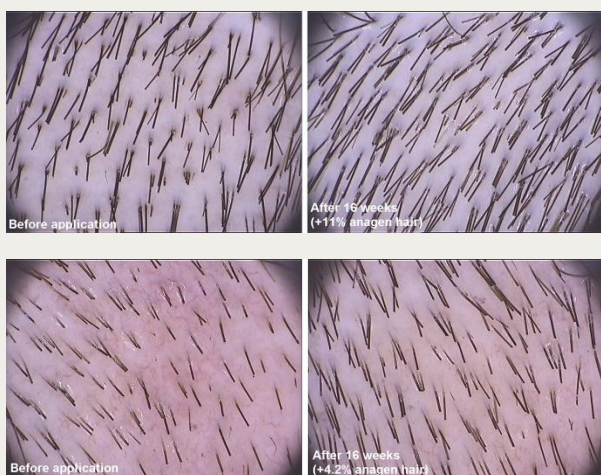
The aim of the study was to investigate a potential efficacy of SPHINGONY® on increasing the hair anagen phase and improving overall hair quality and scalp health.

The TrichoScan® method was employed to objectively determine the state of the hair life cycle such as anagen and telogen rate. Visual and perceivable effects were assessed by expert rating and photographic documentation.

An ethanolic Hair Tonic was provided and evenly applied to the scalp (dry hair) and hairline by the volunteers in the morning and evening, aided by some gentle massage. Measurements were conducted before first application (t0) and after 8 and 16 weeks of product application. Data from a total of 96 test subjects was considered.

Photographic documentation was standardized, and hair was washed the day before measurement and no styling products were used. Neither was hair tonic used on the day of visit.

The TrichoScan® images clearly show the effects of SPHINGONY® application (Figure 2). The increase in anagen hair leads to a perceivably increased amount of hair on the scalp. Also, the effects on scalp health are indicated by the TrichoScan® images.



**Figure 2:** Examples of photographic images recorded by the TrichoScan® method for two male volunteers from the SPHINGONY® group, before application (left column) and after 16 weeks (right column). The improvements in anagen hair and scalp health are clearly visible.

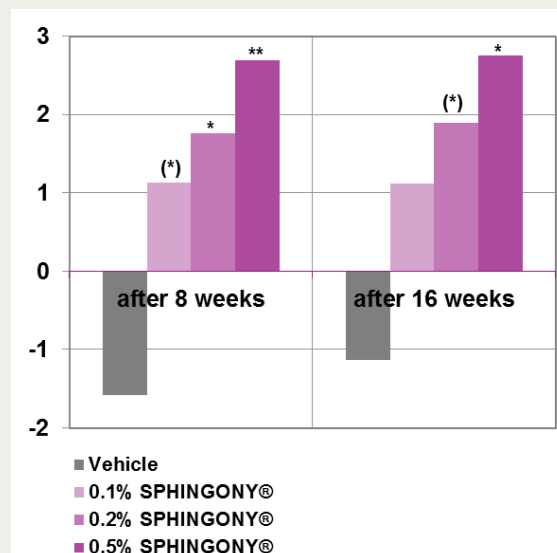


**Figure 3:** Photographic documentation of the effect of SPHINGONY® application on two male panelists.

The photographs (Figure 3) clearly show the effect of SPHINGONY® application, and a perceivably increased amount of hair, due to the improvements in hair anagen rate. Effects are achieved already after application of 0.1% SPHINGONY®.

TrichoScan® images were additionally analyzed. One is able to distinguish between growing (anagen) and non-growing (telogen) hair. Based on the recorded images anagen hair rate [%] was calculated (Figure 4).

### Change in anagen rate (combined) [%]



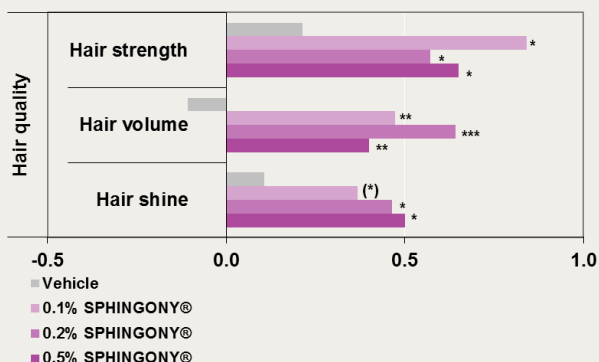
**Figure 4:** Anagen rate as determined by TrichoScan® measurements. An increase in anagen rate was detected, which was particularly pronounced when compared to Vehicle application. Statistics: (\*)  $p < 0.1$ , \*  $p < 0.05$  vs. Vehicle.

In the Vehicle group, anagen rate decreased by 1.6% and 1.1% after 8 and 16 weeks, respectively. In all SPHINGONY® groups anagen rate increased. The increase was highest and significant (compared to the change in the Vehicle group) in the 0.5% SPHINGONY® group, with 2.7% and 2.8% after 8 and 16 weeks, respectively. In the 0.2% and 0.1% SPHINGONY® groups increases were 1.8%/1.9% and 1.1%/1.1% (after 8/16 weeks), respectively.

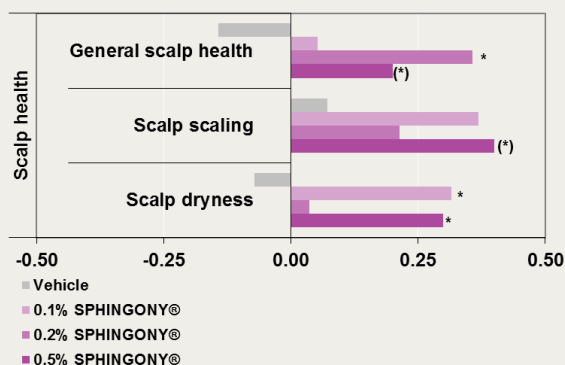
Relative to Vehicle, the increase in anagen rate in the 0.5% SPHINGONY® group was 4.3%/3.9% (after 8 and 16 weeks, respectively), 3.3%/3.0% in the 0.2% SPHINGONY® group and 2.7%/2.3% in the 0.1% SPHINGONY® group.

Regarding the expert rating (Figure 5), all hair quality and scalp health parameters were improved after application of any concentration of SPHINGONY®. In particular, hair quality parameters were strongly improved in all SPHINGONY® groups compared to vehicle, and improvements in hair volume scored best.

Improvement in hair quality (expert rating, combined) [score]



Improvement in scalp health (expert rating, combined) [score]



**Figure 5:** Changes in hair quality and scalp health parameters as determined by expert rating on the basis of a questionnaire using a five point scale. Statistics: (\*)  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  vs. Vehicle.

SPHINGONY® is the trade name for the naturally occurring, skin-identical molecule Sphinganine. To summarize, particularly with androgenic alopecia, SPHINGONY® targets hair loss by balancing the hair life cycle, strengthening the hair follicle and improving scalp health. Application of SPHINGONY® has a positive effect on anagen hair rate.

A detailed test summary report (technical dossier) including *in vitro* and *in vivo* studies is available on request.

### Claim summary

#### SPHINGONY®

- Prevents hair loss
- Rebalances the life cycle of the hair
- Improves general scalp health and hair quality
- Promotes formation of building blocks for hair and scalp

## Formulation hints

SPHINGONY® is soluble in pure ethanol or in polyethylene glycol. An ethanolic solution of 2% is readily prepared at room temperature; higher concentrations require prolonged stirring and/or heating.

For preparation of hair tonics, it is recommended to dissolve SPHINGONY® in a raw material (e. g. TEGOSOFT® PC 41, TEGO® SML 20, TEGOSOFT® GC), if required by heating, before addition of other ingredients like emollient, ethanol and water. Additional raw materials with good solvency for SPHINGONY® are TEGO® SMO 80 V, TAGAT® CH 40, TEGINACID® C, TEGO® Alkanol L4, REWODERM® LI 63, TEGOSOFT® APM and TEGOSOFT® G 20.

For preparation of conditioners, SPHINGONY® is added to the hot oil phase until homogeneously solubilized, before addition of the other ingredients.

## Recommended usage concentration

Recommended use level 0.1–0.5%, clinically tested at different concentrations.

## Possible applications

- Anti hair loss tonic
- Rebalancing leave-in conditioner
- Multifunctional scalp fluid
- Micellar hair water

## Guideline Formulations

If you are interested in guideline formulations please visit our homepage <https://personal-care.evonik.com>.

## Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport of chemicals
- protective measures for storage and handling
- measures in case of accidents and fire
- toxicological and ecotoxicological effects

is given in our safety data sheets.

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