

Bioactives

PHYTANTRIOL



The time-tested hair
secret to repair,
enhance and protect,
from root to tip



Market and consumer aspects



'Pragmatism' and 'authenticity' are just two of the megatrends currently leading people to modify their behavior. Although very different, these schools of behavior can act synergistically and give rise to trends such as 'departure to tradition'. This is a trend characterized by a renaissance of traditional values as an answer to superficiality. It combines simplicity and rusticism with the highest standards of quality.

Such trends influence every aspect of daily life, especially the appearance. In the context of hair care, enthusiasts of the 'departure to tradition' trend want hair that looks naturally gorgeous, well-nourished and with a healthy shine. Hair should be thick and strong, but at the same time feel soft and well-

moisturized. Styles are pure and simple – a deceptively easy look that in fact requires strong, subtle control and constant grooming, day in, day out – which can be very hard on the hair.

As a major player in the hair care industry, DSM sets out to anticipate trends such as 'departure to tradition' and be ready with ingredients to meet people's needs. DSM pioneered the valuable active Phytantriol, and has developed this ingredient as a conditioning agent in its own right.

Phytantriol combines several properties enabling it to prevent mechanical damage to the hair caused by various stressors such as combing, brushing and styling. Phytantriol is extremely soluble and is therefore a useful addition to many solvents applicable to hair care formulations. As well as being biodegradable and historically safe to use, our own research shows that Phytantriol delivers many benefits, including prevention of split-ends; reduction of color fading; infusion of moisture into the hair and an ability to boost deposition of amino acids and Panthenol in hair.

Key facts

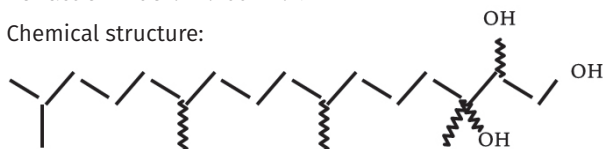
INCI name: Phytantriol

CAS number: 74563-64-7

Product code: 04 2908 2

Refraction index: 1.466 – 1.471

Chemical structure:



Unique features

- Augments deposition of Panthenol, Ethyl-Panthenol and keratin amino acids
- In various formulations provides benefits for normal and damaged hair after single as well as cumulative applications
- High-quality, time-tested product

Application and benefits for hair care products

Shampoo, conditioner, masks, leave-in products, colorants, various styling aids

- Significantly improves water retention
- Strengthens damaged hair
- Provides extra protection against heat damage
- Visibly prevents color wash-out
- Strongly protects against the formation of split-ends

Concentration recommendation: 0.1–0.2% in shampoo, 0.2–1.0% in all other products

Claim substantiation



Deposition

Boosts effects of Panthenol, Ethyl-Panthenol and keratin amino acids.

Moisturization

Excellent water retention by Phytantriol alone and in synergy with Panthenol.



Strengthening

Greatly strengthens damaged hair when delivered in shampoos and conditioners.

Color Protection

Visible prevention of wash-out from various color shades.



Split-end Protection

Excellent prevention of split-ends after just one application.

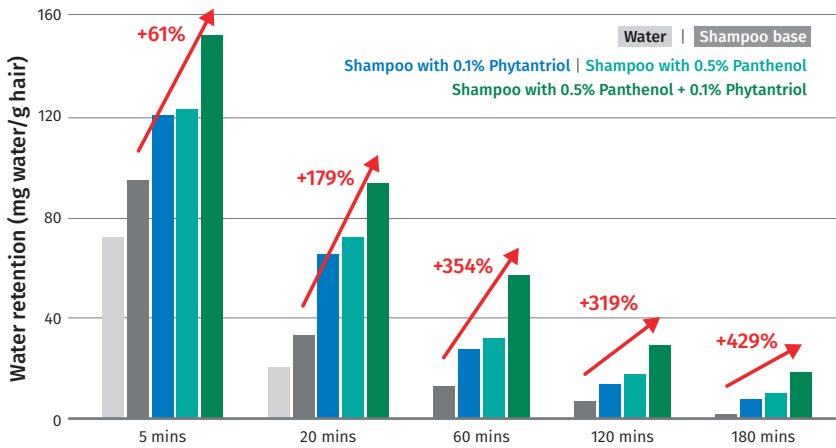
Heat Protection

Good protection against heat damage.



Moisturization

A moisture retention test was conducted on normal hair swatches washed with water, a shampoo base, shampoo base containing either 0.5% Panthenol or 0.1% Phytantriol, or shampoo base containing a combination of both. Assessment of water loss over time was performed gravimetrically.

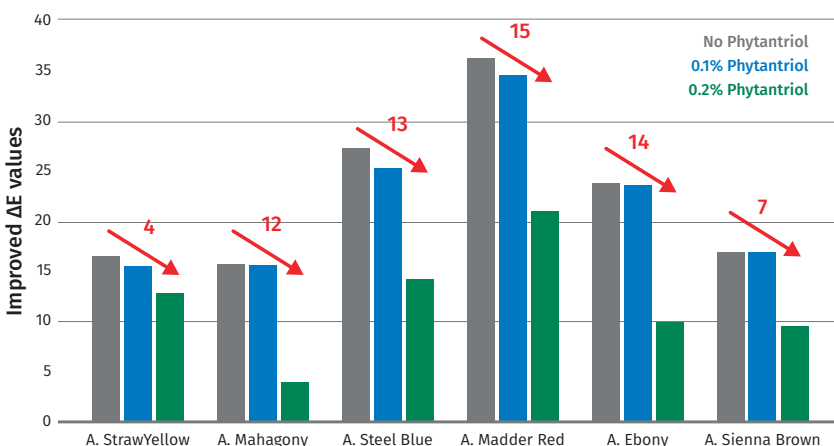


Moisturization with Panthenol and Phytantriol was shown to be greater than with the control shampoo or just water. The initial values for Panthenol and Phytantriol individually were, respectively, 30% and 28% higher than the control shampoo, and a combination of the two resulted in a value that was 61% higher than the control.

Even more impressive was the water retention over time, where after 3 hours the values for Panthenol and Phytantriol were 214% and 143%, respectively, whilst a combination of the two demonstrated a clear synergistic effect, with a value 429% higher than the control shampoo.

Color Protection

The color protection test was performed on normal hair after a single application. The hair coloring formulations contained various direct hair dyes plus up to 0.2% Phytantriol. The washing steps were repeated 10 times before a final assessment of L^*a^*b according to CIELAB and calculation of ΔE values.

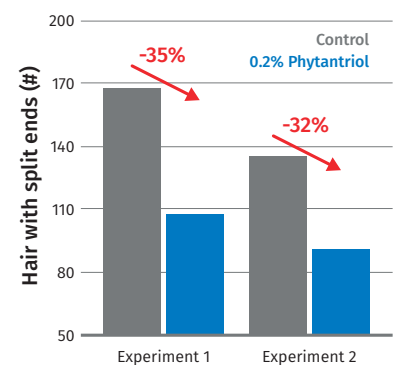


Within colorations, 0.2% Phytantriol was shown to be more effective than 0.1% or no Phytantriol after a single application. The extent of wash-out reduction depends on the chemistry of the direct dyes themselves, but for every dye tested the impact of 0.2% Phytantriol was clearly measurable and visible to the eye. Whilst the best results were achieved with red tones, the difference in ΔE values for blue and black tones was also in the range of 12 to 15.

Split-end Protection

Tests on the prevention of split-ends were performed as a single application to virgin hair. Hair swatches were treated with a leave-in pump spray containing 0.2% Phytantriol. Hair was stressed first by blow-drying then by treatment in a combing machine for mechanical stress. For the final assessment 200 hairs from each test were counted under the microscope.

Two independent experiments showed the number of split-ends to be reduced by 35% and 32% respectively after application of 0.2% Phytantriol. Even a single product application with Phytantriol is therefore capable of reducing the number of split-ends significantly.



Conclusion

Phytantriol is a unique and time-tested active for hair care applications in particular. It delivers on the key benefits that drive the hair care market today and ultimately supports future lifestyle trends. It can support finished product positioning from hair repair through enhancement to protection, delivering its strengths from root to tip.

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