

PROTECTING HAIR AGAINST UV-DAMAGE AND DISCOLORATION WITH HTEssence®

Hydroxytyrosol is the active ingredient of the olive, functioning as a highly potent antioxidant.

Antioxidants are bioactive molecules that are present in many plants, but not all of them show the same activity. Hydroxytyrosol is considered one of the most powerful antioxidants, and is seeing rapid growth in market demand. Antioxidants are frequently used in cosmetics to protect skin or hair from damaging environmental influences.

HTEssence®: Superior Antioxidant Power

The antioxidant power of ingredients is usually measured by analyzing their reduction potential, which is a reflection of their antioxidant power. WACKER's hydroxytyrosol HTEssence® has a reduction potential that is more than 1.5 times higher than that of concentrated vitamin C and 4 times higher than that of concentrated vitamin E (Figure 1), which are common ingredients used as radical scavengers in cosmetics.

Its superior antioxidant power makes HTEssence® a highly suitable protection agent for UV-damage caused by free radicals.

HTEssence®: A Proven Solution for Hair Protection

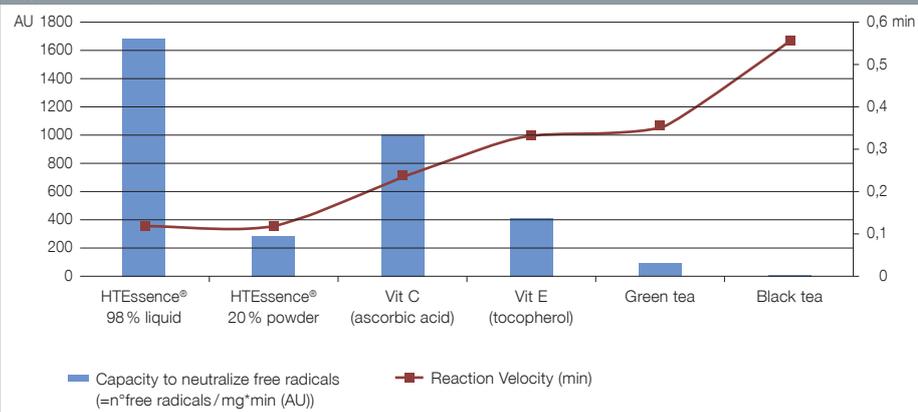
The protective effect of HTEssence® on UV-induced damage and discoloration of hair has been proven in scientific studies on Caucasian hair samples.

In the first study, Caucasian hair samples were soaked in water (control) or an aqueous solution of HTEssence® (0.5 % HTEssence® 20 % powder) for 20 minutes and then exposed to UV-radiation (Figure 2). Subsequently, the melanin-protection by HTEssence® in hair was measured by ESR (electron spin resonance spectrometry). Melanin protects the hair against damage caused by UV-induced free radicals. The results show that the ESR profile of hair treated with HTEssence® and exposed to UV-radiation is comparable to that of unexposed hair, demonstrating

the protective effect of HTEssence® against UV-damage (Figure 3).

In a second study, a red-colored (Majirouge 6.6, see Figure 4) Caucasian hair sample was divided into two parts. One part was soaked in water (control), the other in an aqueous solution of HTEssence® (0.5 % HTEssence® 98 % liquid). After 20 minutes, the samples were treated with a rinse-off conditioner containing BELSIL® ADM 6102 E and then dried. Subsequently, the hair samples were exposed to UV-radiation with a power of 450 W for 24 hours (corresponding to 2 weeks' exposure to sunlight).

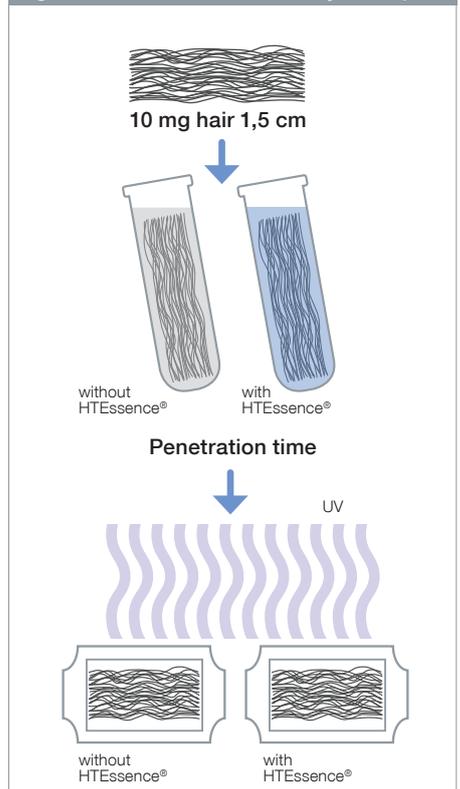
Figure 1: Comparison of HTEssence® Antioxidant Power



Comparison of the antioxidant power of HTEssence® with other commonly used antioxidants. Antioxidant power determined by electron spin resonance spectrometry; measured by an independent test institute.

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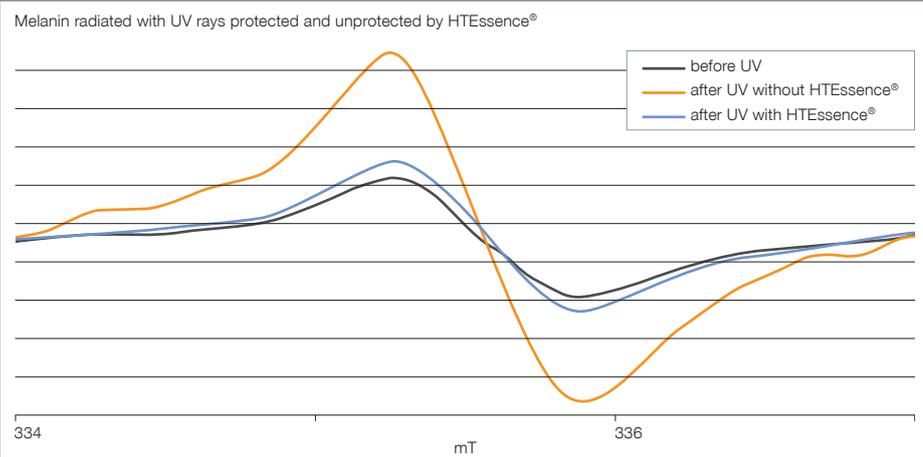
Figure 2: Hair Protection Study Set Up:



Experimental set-up of the hair protection study.



Figure 3: HTEssence® Protects Hair from Oxidation Processes Caused by UV Radiation



ESR-profile of hair treated with HTEssence® and exposed to UV-radiation compared to unexposed hair and hair exposed to UV-radiation without HTEssence® protection.

High Color Fade Protection by HTEssence®

HTEssence® 98 % liquid was shown to protect red-dyed hair against UV-damage. The UV-induced color fade observed for untreated colored hair (control) does not take place when HTEssence® is used as a hair pre-treatment (Figure 4). The red color tone of HTEssence® protected hair after exposure to UV-light cannot be differentiated from that of non-irradiated hair.

Possible Applications

There are a number of different ways of incorporating the UV-protective effect of HTEssence® into your product line. Due to its ease of formulation, HTEssence®

can be used in a broad variety of products, ranging from hair masks over leave-in hair products to protection sprays for colored hair.

HTEssence® Product Forms

- Spray-dried powder with 20% hydroxytyrosol content on maltodextrin, available in 5 kg & 20 kg packaging.
- Liquid form with highly pure 98% hydroxytyrosol content, available in 5 kg and 20 kg packaging.

Figure 4: Comparison of Hair Treated with HTEssence® and Control Sample



Hair pre-treated with 98 % liquid HTEssence® kept its red dyed color after exposure to UV-light.

Key Benefits of HTEssence® For UV-Protection Of Hair

- High antioxidant power
- Strong protection against UV-induced hair damage
- High fade protection for colored hair
- No undefined byproducts
- Easily soluble in aqueous systems and o/w emulsions
- Synergistic effects with the WACKER BELSIL® portfolio

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