



Active oils to the rescue of dry hair & scalp

By Anna Momméja

Introduction

Dry hair is a common concern, consumers usually seek products respecting, nourishing and smoothing their hair. Low-poo textures are well adapted for these hair types thanks to their richness and lower lipid removal action. Hair oils are, of course, also perfect candidates to replenish the hair lipidic film. However, what about dry scalp? Usually, scalp concerns are associated with greasiness and dandruffs, but other scalp problems may occur. Indeed, dry scalp is another important condition that can lead to irritations and scalp discomfort. With the menopause, mature women are especially touched. The synthesis of collagen and the lipid production in skin and scalp decrease and skin dryness increases¹. Cell metabolism slows down as well. All these factors impact the scalp and the hair growing on it, becoming thinner and lacking volume. The decrease of metabolism and sebum production does not only lead to thinner and dryer hair, but also to dryer scalp and skin.

A bioinspired approach

Seppic, to answer the need of those hair & scalp in distress, developed a range of active oils. Following a bioinspired approach, we selected specific plants rich in antioxidant molecules. These plants are "halophytes", which means they are salt-stress resistant. They live on the seaside and are exposed, not only to sea salt, but also to wind and to high UVB dose due to the reflection of the sun on the surface of the sea. To resist these different stresses, they develop specific molecules. Some plants are known to produce cationic molecules to resist the osmotic stress, whereas the synthesis of phenolic compounds is usually associated with the defense versus UVB rays and antioxidant properties.

Sea Beet and Golden Samphire

Two plants were identified to develop active ingredients with scalp & hair care benefits: the sea beet, also called the wild spinach, and the golden samphire. A natural light oil, caprylic/capric triglycerides, was used for the extraction process of both plants, leading respectively to the commercial active ingredients SEA SATIN™ and INULA HC.



Fig. 1 Sea beet on the beach (©BIOTECHMARINE)

SEA SATIN™, active oil from the sea beet

SEA SATIN™ (Caprylic/Capric Triglyceride – Beta Vulgaris [Beet] Root Extract) was tested *in-vitro* and *in-vivo*. *In-vitro*, on reconstituted epidermis, it demonstrated a significant reduction of lipoperoxidation (-13%) versus non treated, thus reducing the risk of oxidative damages on scalp and hair fiber. Tested on keratinocytes exposed to UVB stress, it also exhibited significant soothing action from 0,2% by reducing the amount of inflammatory mediators like PGE2 (-13%), IL-1 (-21%) and IL-6 (-21%). Finally, it was shown that SEA SATIN™ protects the cell from ageing by significantly slowing down the senescence process (beta-galactosidase assay). These three mechanisms of action are interesting for scalp protection against irritation and inflamm'ageing occurring on dry scalps.

In-vivo, SEA SATIN™ was tested at 1% on 20 women with dry & damaged hair. The structure of the hair fibers was evaluated by an electron microscope. After 28 days of daily use, the hair structure was significantly improved versus D0: +62% improvement of scales aspect (smoothing effect). The self-evaluation also allowed identifying the key benefits perceived by the consumer. Shine improvement was the benefit n°1 with +22% satisfaction versus placebo while volume was n°2 with +14% satisfaction versus placebo.



Fig. 2 Tresses after one colouring shampoo, with or without INULA HC



Fig. 3 Golden samphire

INULA HC, active oil from the golden samphire

Tested *ex-vivo* on explants, INULA HC (Caprylic/Capric Triglyceride – Inula crithmoide leaf/flower extract) demonstrated a significant boosting effect of total lipids (+73%) and also more particularly polar lipids (+87%) neosynthesis, thus highlighting a beneficial relipidification effect for dry scalp & hair. Furthermore, a test on reconstituted epidermis was used to evaluate the antioxidant effect of INULA HC. It demonstrated a significant reduction of -14% versus non-treated, thus reducing as well the risk of lipoperoxidation on scalp and hair fibers. These two actions show a relipidification of the scalp associated with an antioxidant protection.

On tresses, INULA HC was tested in a rinse-off application. It was solubilized and stabilized at 1% in a colouring shampoo. After a single application, shine was enhanced as well as the colour uptake (Fig. 2). The hair tresses were also softer with INULA HC treatment versus placebo.

Both active oils SEA SATIN™ and INULA HC are well suited to address the needs of dry scalp and hair. The oily nature of these ingredients replenishes the scalp barrier and smoothes the hair fiber, whereas the antioxidant molecules of the sea beet and the golden samphire soothe and protect the scalp and the hair fibers from oxidative damages.

References

1. Skin and Menopause. H Bensaleb 1, F Z Belgnaoui, I Douira, I Berbiche, K Senouci, B Hassam - 2006 Dec



Anna Momméja

Product manager & EIMEA / LATAM active ingredient sales & marketing support, she has been working for Seppic since 2014. Graduated in "Natural Cosmetic Raw Materials" at the ISIPCA and University of Versailles-Saint Quentin en Yvelines, she previously worked as application laboratory manager at another supplier of cosmetic raw materials before joining Seppic as a sales manager. She has been occupying her current position since 2017.

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