A Natural Approach to Treating the Physical and Behavioural Properties of Hair with Actisea® H_2O and Actiberry™

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Abstract

Hard keratins (hair and fingernails) are quite different from skin and respond differently to stresses from the environment and from treatments designed to treat deficiencies.

We have developed several natural plant extracts designed to work optimally when applied to hard keratins. Actisea® H_2O (hereafter AS) is a water based moisturizer with low molecular weight moisturizing agents designed to provide short term and cumulative benefits when applied to hard keratin. The active ingredients penetrate into the keratin interior, accumulate with repeated applications and do not leave a residual film or feel which would impact negatively upon product aesthetics.

The application of 3% AS increases moisture content and improves break strength of both virgin and processed hair. At low humidity, moisture content is increased; however, at higher humidity no increased moisture is observed. Therefore, hair will not appear limp or have a 'bad hair day.' With repeated use, benefits will maximize.

When combined with 3% Actiberry™ (hereafter AB), which is a natural moisturizing base with antioxidants, moisturizing effects are enhanced; and the combination substantially prevents damage from UV exposure.

Introduction

While hair, at least the part we see and that which contributes to our overall perception or impression of its quality, is considered a dead tissue, all cellular reproduction and development and differentiation occur well beneath the skin surface in the follicle[1].

Once the formed keratin structure is visible at the surface, most metabolic activities have ceased. It is fully exposed to the external world and fighting a downhill battle to remain physically intact. There are few if any endogenous repair processes going on within the shaft, or at the surface. This is in contrast to what is happening within the *stratum corneum*, which we once considered a dead tissue. Because of an important functional role in survival and feedback to the living layers of the skin, the *stratum corneum* does in fact have a rich metabolic activity. This is not true for the hair.

Hair does not have an evolutionary role critical for survival; thus, it is more or less on its own when it emerges from the scalp. It does provide protection against UV, and in many species hair (or fur in fact) provides a role in thermal insulation. In humans it historically, and perhaps today as well, plays a role in sexual attraction[1].

While styles change, mid to longer length hair always seems to be desired by some segment of society. Thus, since hair is unable to protect itself very well, and certainly not repair itself, there is a major need for daily use products to provide these functions.

Hair undergoes extensive damage from the environment, mostly UV exposure and low humidity damage from daily washing and blow drying and damage from a variety of beautifying and 'anti-ageing' treatments such as bleaching, colouring, permanent waving, straightening etc.

Herein, we are going to describe the effects of two natural extracts which have been designed to provide optimal protection and reinforce the integral fibre structure. When used over time these materials provide measureable changes in the physical and mechanical properties of hair, however more importantly they provide benefits that the consumer recognizes as 'aesthetic' or beautifying effects.

AS is an all natural sea kelp extract with low molecular humectants and hydrating peptides. It also contains polyphenols, as protective agents. It has been specifically designed to provide intense hydration, yet be lightweight, not