Shea emollients provide tailor made potential

Mette Skovgaard
AAK, Sweden
The sensory profile of an emollient is related to its physicochemical properties, such as polarity and melting point. Emollients contribute differently to skin feel due to differences in their spreadability, viscosity and lubricity. The selection of emollients is crucial knowledge on how to combine emollients with different properties is also essential for the modern formulator, as the right combination of emollients makes it possible to tailor a product to have specific properties.

**TRITERPENE ESTERS**

Historically, *Butyrospermum parkii* has been used by the indigenous peoples of west Africa to not only restore, soothe and protect their skin, but also to treat inflammation, rashes, dermatitis and irritated skin thanks to its excellent healing properties. These properties originate from the unusually high content of triterpene esters, which are secondary metabolites originating from saponins and comprise cinnamic and acetic acid esters of lupeol, amyrin and butyrospermol. Triterpene esters have lower melting points, higher oil solubility and bioavailability in comparison with non-esterified triterpene alcohols. Studies of shea butter enriched triterpene esters show reduced inflammatory status and skin stress induced by environmental factors. Protease inhibiting and possible esters show reduced inflammatory status. Studies of shea butter enriched triterpene esters show reduced inflammatory status and skin stress induced by environmental factors. Protease inhibiting and possible esters show reduced inflammatory status.

**SHEA BLISS**

Functional, stable and safe, and from renewable, natural sources, shea emollients are enormously valuable in cosmetics formulation, says Mette Skovgaard

**SHEA BUTTER, BUT BETTER**

Lipex Shea [INCI: *Butyrospermum parkii* butter] has improved crystallisation properties in comparison with traditional shea butter and gives a rich skin feel with high emolliency. It is optimised in order to facilitate the production of cosmetic and personal care formulations and ensure long term stability. The characteristic rapid stabilisation increases the stability and shelf life in all applications. This material is one of the most similar to traditional shea butter with regard to sensory aspects in application and can easily be used as a replacement in most applications.

The typical crystallization of Lipex Shea and traditional shea butter are illustrated in figure 1. Within the first 24 hours Lipex Shea has stabilised in the stable crystal form and after just a few hours it is already 75% transformed. With traditional shea butter, stabilisation takes up to five days or longer depending on temperature conditions. This indicates high sensitivity to temperature conditions during processing, handling and storage. Rapid crystallisation provides formulations with increased stability and ensures minimal changes in texture and appearance during shelf life.

**LIPEX SHEASEOF**

In vivo pilot studies have proven Lipex SheaSoft [INCI: *Butyrospermum parkii* butter] to provide high moisturisation and skin barrier improvement. This material is a semi-solid butter with a unique melting profile giving a creamy consistency and good heat stability. It is soft and plastic at body temperature with long playtime and skin softening properties. The optimised slow melting at body temperature means the formulations impart a caring and luxurious sensation to the skin (see figure 2).

The rapid crystallisation of the parki butter in combination with improved temperature stability gives smooth and homogeneous formulations with improved shelf life stability. It offers an excellent choice for a wide range of applications due to improved stability thanks to optimised crystallisation properties, making processing easy and reducing the risk of changes in consistency over time.

**LIQUID SHEA**

The semi-solid shea butters are highly moisturising, but the skin feel can sometimes be considered too rich, especially when used in high concentrations. The use of liquid shea butters and esters gives a lighter skin feel and makes it possible to further increase the shea butter content in the formulation without causing the viscosity. Liquid sheas are available in a wide range of viscosities providing the possibility for tailor made spreadability of formulations as lowered viscosity increases spreadability. In comparison with traditional shea butter, the liquid shea products make formulation easier as there are no crystallisation issues to consider when formulating and they are also suitable for cold processing.

**NO CRYSTALLISATION CHALLENGES**

Lipex WM [INCI: Shea butter oleyl esters] is an emollient with the skin protecting and spreadability properties of shea butter combined with the lighter, more elegant feel of esters, but a lower spreadability than shorter esters. This makes it possible to produce formulations with a velvety, non-oily sensation and moisturising properties.

**LOW VISCOSITY & LIGHT SKIN FEEL**

Lipex SoftShea [INCI: Shea butter oleyl esters] is the most recent addition to the shea line and is the emollient that provides the lightest skin feel. It is non-greasy and more powdery than other shea butters and esters. In light, silky skin feel is the result of its very low viscosity and high spreadability at body temperature. These properties make it possible to obtain any desired texture or sensory character by selecting the optimal combination of emollients. In combination with vegetable oils and butters it will contribute to improved spreadability and a lighter sensation in skin and hair care formulations.

**AFRICAN ORIGINS: TRANSPARENT & SUSTAINABLE**

Shea butter is extracted from the kernels of the shea tree (*Butyrospermum parkii*) that grows in the dry savannah belt of west Africa from Senegal to Sudan. The trees grow in the wild, so no land clearing is required and the trees are protected by local laws. They are pollinated by bees and require no use of fertilisers or pesticides. The trees have a life cycle of more than 200 years and start to produce fruit when they reach 20-25 years. They produce a tasty fruit with a kernel containing a high oil content, providing food, work and income for women in west Africa.

Since early 2000, Swedish company AAK has increased its presence in west Africa in order to buy direct from the local women who collect the kernels rather than buying shea kernels from dealers. This ensures the highest possible quality of shea. Local staff travel around and educate the women on issues affecting the shea kernels during harvesting, handling and storage. Currently, over 30,000 women in Burkina Faso participate in a pre-finance plan for their work. This means they receive pre-finance during the time of year when they must cash out money. The women also find it more beneficial to sell the kernels than to make and sell shea butter. The pre-finance project will be further expanded during 2014-15.

Kolo Nafaso, AAK’s shea project in Burkina Faso, is a win-win situation for the women’s groups and for AAK and its customers who receive a better quality of kernels in a transparent and efficient way.