



AN ARTICLE FROM AAK PERSONAL CARE

Shea emollients provide tailor made potential

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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, so 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

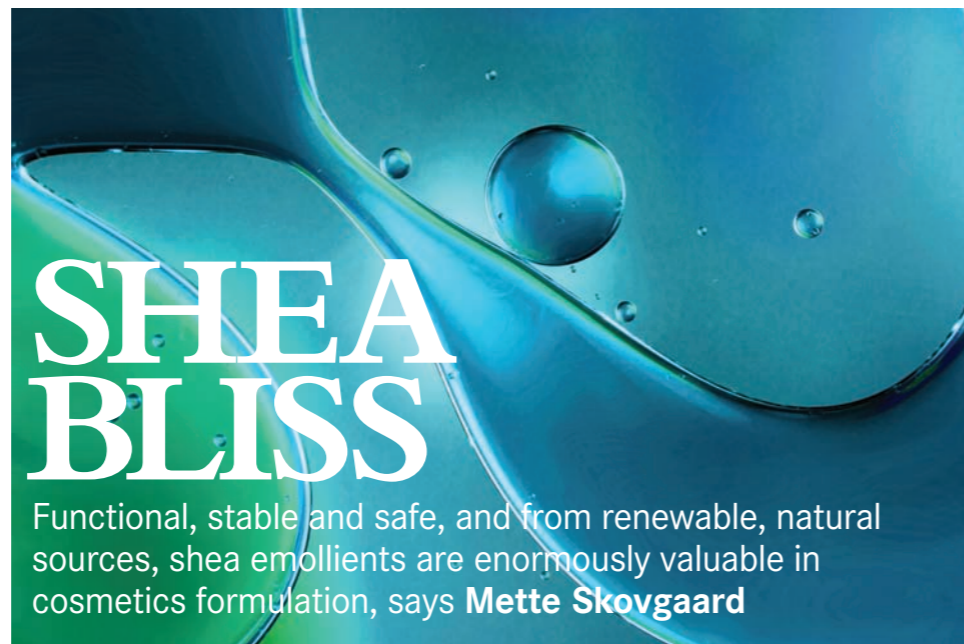
Historically, *Butyrospermum parkii* has been used by the indigenous peoples of west Africa to not only restore, soothe and protect their skin, but also to treat inflammation, rashes, dermatitis and irritated skin thanks to its excellent healing properties. These properties originate from the unusually high content of triterpene esters, which are secondary metabolites originating from squalene and comprise cinnamic and acetic acid esters of lupeol, amyryl 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 collagen stimulating properties have also been observed in both *in vitro* and *ex vivo* studies. These studies indicate potential epidermal protection and revitalisation of the skin.

FUNCTIONALITY & STABILITY

The Lipex shea butters and esters are specifically developed for the beauty and personal care industry. The wide range of highly stable shea products with improved functionality is obtained by careful product development over many years. All the products are low in colour and free from malodours in order for customers to be able to formulate white and odour-free products.

SEMI-SOLID BUTTERS

These shea butters contribute to a rich skin feel and help to improve skin moisturisation as they leave low levels of lipid residue on the skin. The semi-solid butters are suitable for rich formulations and help to fine-tune the consistency and texture of formulations. All the shea butters are optimised to meet the functional challenges of beauty and personal care products. This optimisation also includes improved crystallisation properties and rapid stabilisation into the stable crystal form.

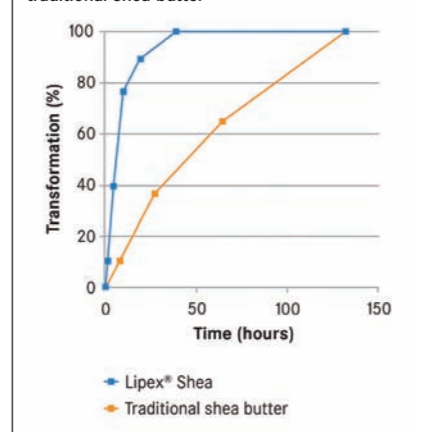


SHEA BUTTER, BUT BETTER

Lipex Shea [INCI: *Butyrospermum parkii* butter] has improved crystallisation properties in comparison with traditional shea butters 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 the one 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 crystallisation 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%

FIGURE 1
Typical crystallisation of Lipex Shea and traditional shea butter



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 SHEASOFT

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 formulations impart a caring and luxurious sensation to the skin (see figure 2).

The rapid crystallisation of the product in combination with improved temperature stability gives smooth and homogenous 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 increasing 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 205 [INCI: *Butyrospermum parkii* butter or *Butyrospermum parkii* oil] is a highly versatile liquid shea butter and can be used in emulsions, anhydrous formulations and surfactant based products where it moisturises, nourishes and protects the skin. It is a good source of essential linoleic acid, providing skin caring properties. It can be used in skin care, hair care and styling, make-up, bath and shower products and antiperspirants where a lighter consistency is needed.

SHEA BASED ESTERS

The shea butter esters typically have a lower viscosity and higher polarity than the triglyceride based emollients, so enable light formulations. Both esters are fully renewable and are made with environmentally acceptable catalysts and processes that require low energy input to minimise the environmental impact.

LIPEX SHEA WM

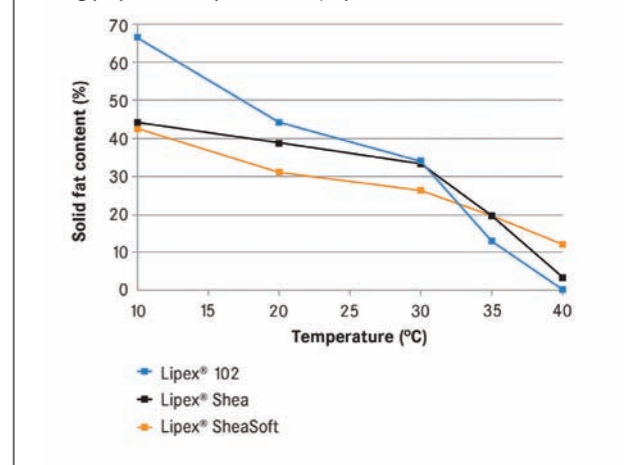
Lipex Shea WM [INCI: Shea butter oleyl esters] is an emollient with the skin protecting properties of shea butter combined with the lighter, more elegant skin feel of esters, but a lower spreadability than shorter esters. This makes it possible to produce formulations with a velvety, non-oily sensation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

LOW VISCOSITY & LIGHT SKIN FEEL

Eco-designed ester Lipex SheaLight [INCI: Shea butter ethyl 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. Its 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

Studies of shea butter enriched triterpene esters show reduced skin stress induced by environmental factors

FIGURE 2
Melting properties of Lipex SheaSoft, Lipex Shea and traditional shea butter



lighter sensation in skin and hair care formulations.

This material mixes well with different types of actives for face care creams and serums and makes the formulation of products for sensitive and ageing skin easy. It is ideal for all types of body lotions, improving spreadability and leaving the skin silky soft. The low viscosity, high polarity and good solubility properties make it a

good pigment disperser or base for make-up removers and emulsion type facial cleansers. It also enables the formulation of very low viscosity products with easy application, including sprayable emulsions. **cb**

Author

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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 most need 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 there and for AAK and its customers who receive a better quality of kernels in a transparent and efficient way.



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