

GLOBAL

AAK Beauty and Personal Care
Magazine 2011



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with bioactive shea triterpenes**

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Awareness of sustainability is increasing – why? What is driving it? Climate change or no climate change, we all see reports in the news about natural disasters, such as torrential rains, drought, floods, hurricanes, etc. – yes, we have had them before, but they are more frequent and getting stronger.

All business is dependent on the world in which it operates, and at AAK, as producers of natural and renewable raw materials, we have to take responsibility for the world around us.

We at AAK will develop a financially sustainable operation which takes responsibility for the world in which we operate, right the way through to our customers. This will be the platform for everything that we do. Our operations depend on natural and renewable raw materials provided by plants around the world. The mission is to process these raw materials and transform them into functional ingredients which are essential to people and products and provide value for customers, employees and other stakeholders.

AAK sees sustainable development as fundamental to its operations. Environmental and social responsibility together with financial growth form a trinity in which every part is equally important for the company's future survival and success.

We have adopted the GRI (Global Reporting Initiative) framework to focus on the core indicators. We believe that transparency is a keyword if we are to be successful.

To mention a few key areas: one is our responsibility to the growers and suppliers of raw materials. Shea is an important naturally growing raw material for AAK. Women in the villages of Africa harvest shea by collecting the fallen fruit from under the trees. AAK participates in extensive programmes aimed at improving living standards in the areas in which we operate. Another important area is our responsibility for energy consumption. Energy must be consumed with great respect for long-term ecological development. At the plant in Sweden where all Lipex-branded products are produced, more than 90% of the direct energy consumed comes from biofuel and biomass.

Interesting in knowing more about AAK and formulating for sustainability? – read page 6.

Join us and make the world more beautiful!

Rita Leissner

Stable and sustainable base oils for baby, spa and bathroom applications

Natural oils are great ingredients from a sustainability point of view. It's a pity that most of them are too unsaturated and sensitive to oxidation so that it is difficult to formulate personal care products with sufficient shelf life. This problem can easily be solved with High Oleic Brassica Oil, a new variety of rapeseed oil which can be used to replace soybean oil, sunflower seed oil and other sensitive ingredients in shower creams and bath oils.

High Oleic Brassica Oil (INCI: Brassica Campestris Seed Oil) is produced from high-quality seeds by mechanical extraction and subsequent mild purification and deodorisation to remove any



environmental contaminants. The low levels of linolenic and linoleic acid gives a shelf life of a minimum of 12 months without excessive oxidation and smell development.

A typical use for High Oleic Brassica Oil is shown in Shower Cream Oil formula below. The oil is included in this formulation for improved moisturisation and skin softening, also contributing to a cleansing action. It can also be used as a base in bath oils, baby cleansing lotions and other applications where high emolliency and moisturisation are needed. It is also suitable for clear formulations as the cloudpoint is lower than 0°C.

High Oleic Brassica Oil from AAK opens up a new possibility for making formulations that are environmentally friendly and sustainable, with functionality to meet the consumer expectations.

High Oleic Brassica Oil	
<i>Botanical origin:</i> Brassica campestris seed	<i>Country of origin:</i> Sweden
<i>INCI name:</i> Brassica Campestris Seed Oil	<i>REACH status:</i> Exempted Appendix V.9
<i>Major fatty acids:</i> Oleic acid 75 % Linoleic acid 14 % Linolenic acid max 2 %	<i>Use levels:</i> Shower creams <15% Shower oils <50% Bath oils <75%
<i>Oxidative stability index:</i> 16h @ 110 °C	<i>Packaging:</i> 190 kg drums

Shower Cream Oil	
Formula AAK-11-135tili	%
High Oleic Brassica	10
Lipex Shea Betaine	1
Cocamidopropyl Betaine (Active matter)	3
Sodium Laureth Sulfate (Active matter)	12
Lauric Acid	3
Guar Hydroxypropyltrimonium Chloride	0.5

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Create high-value functional formulations with bioactive shea triterpenes

Lipex Shea Tris provides a new bioactive tool to the formulators of functional skin care formulations. The pure natural triterpenes bring potent skin caring and protecting properties of high value for maintaining a balanced and healthy skin.

Lipex Shea Tris is unique with its high content of purified and well characterized lipophilic triterpenes. Documented functionality together with good bio-availability and skin compatibility make Lipex Shea Tris an attractive and natural bioactive ingredient.

Proven skin strengthening, anti-inflammatory and protease-inhibiting activities of shea triterpenes are all properties of importance for preventing negative effects of environmental stress conditions and skin ageing – properties also of high importance for ensuring a well-moisturized and healthy balanced skin.

Strengthens and protects the skin

Lipex Shea Tris offers valuable protection against effects of environmental aggression by strengthening the epidermal skin barrier and preventing harmful effects of inflammatory conditions of the skin. Ex vivo testing has demonstrated an increase in epidermal thickness with good maintenance



documented in several studies and are of high importance for protecting against skin inflammation caused by stress factors such as UV exposure, chemical irritants and peroxides.

Lipex Shea Tris has further been demonstrated to protect the skin collagen structures. Ex vivo testing has shown an increased content of dermal collagen after 6 days treatment with cream including 0.5 % Lipex Shea Tris versus placebo cream (Fig. 2). Additional confirmed anti-collagenase and MMP inhibiting activities of the shea triterpenes further demonstrate their potential skin-protecting properties and ability to help to keep skin elastic and firm.

Formulating with Lipex Shea Tris

Lipex Shea Tris is easy to formulate into various emulsions as well as anhydrous formulations thanks to its typical semi-polar character and relatively low melting point. It is easily dissolved in polar or semi-polar emollients such as esters and vegetable oils and shows good compatibility with most common emollients. Typical use concentration 0.1–0.5 %.

of skin morphology after only 6 days treatment with cream including 0.5 % Lipex Shea Tris versus placebo cream (Fig. 1). Anti-inflammatory properties of shea triterpenes have been

Support a healthy skin appearance with Lipex® Shea Tris in:

- *Facial and body care*
Protecting against environmental stress and promoting a moisturized, well-functioning skin barrier.
- *Sun care*
Reducing the negative effect of UV exposure and facilitating skin repair and balance.
- *Colour cosmetics*
Protecting, regenerating, and healing dry and sensitive skin.
- *Surfactant-based formulations*
Use for mild cleansing and regeneration of the skin barrier.

Fig. 1 Lipex Shea Tris strengthens the skin's epidermal barrier.

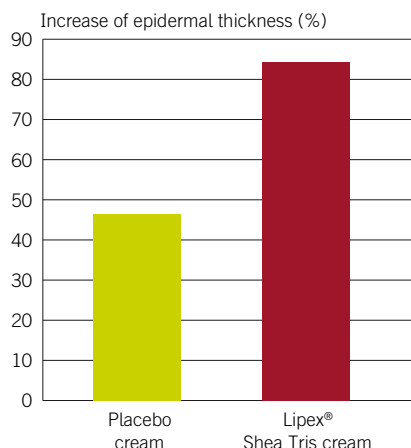
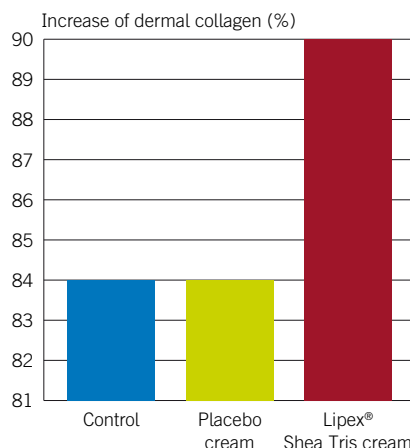


Fig. 2 Lipex Shea Tris protects the skin dermal structures.



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Illipe is an important source of income for the Dayak people, the habitants of Borneo.

Borneo Butter for Natural Body Care

Lipex Illipesoft is a soft and elegant butter that has excellent moisturisation properties. Additionally, it has improved crystallisation which makes it even more enjoyable to use. Finally, it is a sustainable ingredient from the rainforest of Borneo.

Illipe butter originates from the tropical rainforests of Borneo. Illipe fruit grows on shorea trees that grow on the riverbanks and in the swamps at altitudes up to 800 metres. The local rainforest climate offers perfect growing conditions for the shorea tree. It can grow 40 m high and 60 cm in diameter. The tree flowers and bears fruit every 3 years. The kernels from the fruits are collected by the Dayak people who live in the Borneo forests. The Dayak people use Illipe butter for cooking and to make part of their living.

The illipe kernel is enclosed by five leaves that act as wings. When the nut falls from the tree, the wings help to increase the distance between the kernel and the mother tree; this creates more space for the new tree to grow.

The INCI name of illipe butter is Shorea Stenoptera Seed Butter. 'Shorea' is after John Shore, a Governor-General of the British East India Company 1793–1798, who brought the

kernel and butter to the Western world. 'Stenoptera' means winged seed or stone.

Classic illipe butter, like Lipex 106, is a hard and brittle butter that melts around body temperature. The fatty acid composition is similar to that of cocoa butter; it is high in stearic, oleic, and palmitic acid.

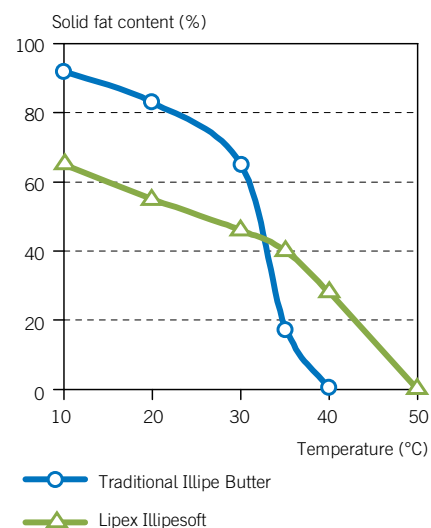
Lipex Illipesoft when skin and lips need extra care

Lipex Illipesoft melts at a higher temperature (49 °C), but is much softer at room temperature when compared with classic illipe butter (see Fig. 1). Basically, Lipex Illipesoft melts very slowly, which increases the play time: once applied to the skin you feel its presence much longer. This slow-melting property is very suitable for body butters and anhydrous balm products for when the skin and lips need some extra care.

In contrast to classic illipe butter, Lipex Illipesoft crystallises rapidly into its preferred beta form. This fast crystallisation helps to increase the stability of your formulation. This is especially important when it is used as a sensory modifier at higher levels (2–5 %). Lipex Illipesoft can also be used as a marketing ingredient; in this case using around 1 % is sufficient.

In conclusion, Lipex Illipesoft is a natural and exotic ingredient that is easy to use and offers new options for your formulations.

Fig. 1



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Get the functionality out of Shea Butters into your formulation

Successful cosmetic products rely on a formulator who creates formulations that grab consumers' attention, based on the right choice of ingredients.

Lipex Shea Butters are more than a natural trend, bringing functionality into formulations and helping formulators to offer safe, reliable and innovative products for a demanding market, to make your business grow in a natural way.

Formulation benefits of Lipex Shea Butters

Shea butter requires purification due to its odour and yellowish colour. Lipex Shea Butters are further optimized to provide a variety of different ingredients with useful physical properties for improving cosmetic functionality in a wide range of products.

Unstable products can lead to a total catastrophe for any company, causing a drop in sales and even worse – destruction of the brand! Consumers take stability for granted – it's up to the formulator to choose the right ingredients. Forget struggling with bloom and poor stability – using Lipex Shea Butters you can offer trustworthy, stable cosmetics with high functionality.

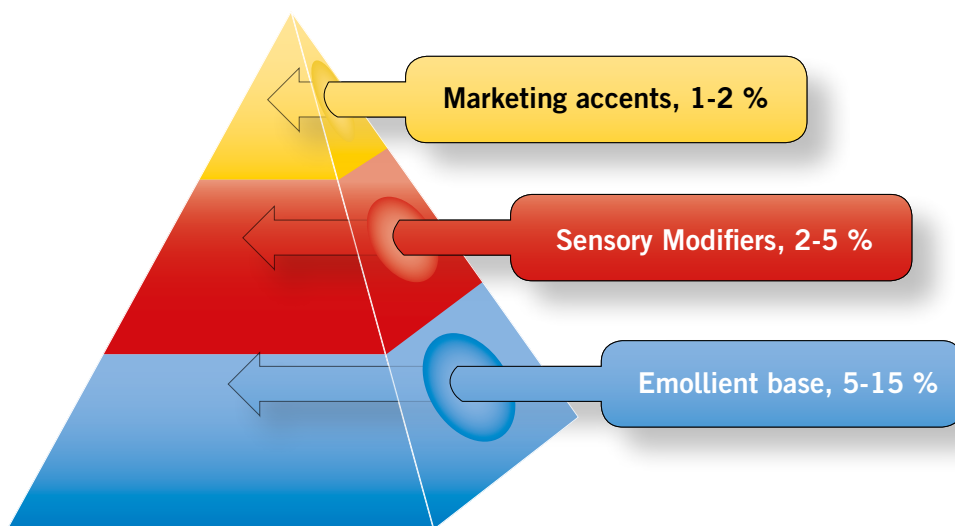
Lipex 205, the liquid shea butter, will make your staff smile with its ease of handling – saving you time and money. Lipex Sheasoft, a temperature-stable, semi-solid shea butter, stabilises quickly, bringing long shelf-life and improved moisturisation. Both ingredients provide elegant skin sensation and proper consistency in formulation, even better than traditional shea butter. But – how to bring out the best of your emollient composition?

Lipex Emollient Selector

There are specific characteristic attributes for different formulation categories. The Lipex Emollient Selector can help to optimise the emollient composition in cosmetics for any formulator. The emollients are catalogued in three groups describing their role in the formulation. Base emollients bring depth and solidity, emollients on top give marketing claims.

Emollients in the heart position of the emollient pyramid play a key role as they influence sensory properties. Lipex 205, the liquid shea butter, gives quick spreading, ideal for prod-

Lipex Emollient Selector



The Lipex emollient selector helps you to make the right choice of emollients to optimize functions in advanced cosmetics. Lipex 205 and Lipex Sheasoft are two good examples of sensory modifiers

uct categories where light and easy-to-apply formulations are required, as in facial creams and body lotions, leaving the skin soft and smooth with a pleasant feel. Lipex Sheasoft improves consistency and playtime, giving a richer skin feel, and is intended to be used in more luxurious and nourishing product categories, such as body creams and night creams. Lipex Sheasoft also helps to turn an insignificant easy and light formulation into something more caring and luxurious, due to its longer playtime on application and proven moisturisation (see formulation Moisturing After Sun lotion).

Low dosages for functionality and clear conscience

When used as sensory modifiers, Lipex 205 and Lipex Sheasoft should be added at 2–5% to bring Lipex Shea Butter performance into your formulation. For anhydrous products such as lip balms and heavier body butters, 5–10% or even more improves the functionality even further.

A light product needs a light skin-feel, while a longer playtime gives a luxurious and nourishing feel. Lipex Emollient Selector helps you from the start to meet your consumers' demands in a natural way!

Moisturising After Sun Lotion	
Formula AAK-10-123tli	%
Lipex Sheasoft	3
Akorex L	1
Akoline PG7	3,5
Akoline MD50	1
Akoline SL	0,3
Akomed R	4,5
Dimethicone	3
Cyclopentasiloxane	3



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Formulating for sustainability

Sustainability has suddenly become a hot topic even in the beauty and personal care industry. The trouble is that everybody has a different definition of sustainability, and few seem to be able to agree on how to ensure that our industry and consumers are still here in another 100 years. But sometimes just following common sense and doing things simply can take you a long way. Here's our formula for sustainability!

From farm to skin – and back again

The backbone of sustainability is life-cycle assessments. These are notoriously difficult as we live in a very complex world. If you want to compare different alternatives when formulating, however, you can follow the principles without getting stuck in the details.

When formulating skin care creams, for example, you can concentrate on the largest ingredient type: the emollient. If you can use a sustainable emollient, all else being equal, you have gained a few points on the sustainability scale.

Renewable and eco-friendly emollients from vegetable oils

Then, for the emollient you have to look at the alternatives. Raw materials extracted from the Earth's crust, such as mineral oils, are not sustainable in the long run because they are not renewable. What about silicones? These man-made substances are made from sand but do not occur in nature. Avoiding increasing the amount of man-made substances circulating in the environment is part of the issue, so obviously silicones are not the best solution to sustainable formulations.

So what is left? Well, there are esters and vegetable oils. A lot of esters are made from vegetable oils, so using the vegetable oil directly should again give you some extra points on the sustainability scorecard.

Functional ingredients are key to sustainable solutions

The main reason for using emollients in skin care formulations is to provide skin softening and moisturising properties. The emollient will also determine the sensory properties of the formulation and, together with stabilisers, influ-

ence the consistency of the cream. By selecting multifunctional emollients, the formulation can be made less complex. Vegetable oils are a good base here because they can give both moisturisation, skin feel and delivery of vitamins and other skin nutrients. Vegetable butters also bring consistency and stability to the formulation, making it easier to decrease the amount of stabiliser.

Principles for sustainable sourcing of raw materials

Highly functional emollients require access to high-quality raw materials. AAK has specialised in emollients made from shea butter and from rapeseed oil, for two obvious reasons. First of all, both shea butter and rapeseed oil contain valuable minor components. Skin-healing triterpene esters are found in shea butter while rapeseed oil is a rich source of vitamin E. Secondly, both of these raw materials come from sustainable sourcing. Shea kernels are a valuable auxiliary crop for the farming societies in West Africa, made available by non-destructive harvesting of the fruit of the shea tree. On the other hand, rapeseed is a locally grown crop

in Scandinavia and AAK can benefit from a yearly harvest of high-quality rapeseed close to home. We also use the by-products, for example as animal feed, so nothing gets lost in the process, again improving the sustainability score.

Making the best of your processes

One question is always in focus when discussing sustainability: energy consumption. When discussing sustainable manufacturing, it is also important to look into what type of energy is being used. Lipex emollients have for years been produced with sustainability in mind – conversion of our plant in Karlshamn, Sweden, from fossil fuels to renewable energy

sources started several years ago. Today, over 90% of our direct energy use comes from renewable sources.

Whenever possible without compromising quality, we also use low-energy processes and lower temperatures, again reducing total energy consumption.

In body and in nature

So let's return to our simplified life-cycle assessment. Using vegetable oils in the new skin care cream seems to be a healthy choice from a sustainability point of view. It comes from renewable raw materials, it is processed without polluting the environment and it brings great sensory benefits to the formulation. What

more? The end of the life cycle for the cream is not when it is used on the skin. Part of the emollient is absorbed into the skin and part is washed off and ends up in the sewer. In both cases vegetable oils are a good choice: they are not toxic to either the body or the environment. What more can you ask?



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The AAK ACADEMY™
– the knowledge centre for lipid technology

The AAK ACADEMY is exclusively for our customers. The idea behind this advanced training concept is basically very simple. A good understanding of lipid technology will help to guide you in your search for the best solution for a given formula. It will also facilitate the dialogue between customer and supplier and help us to create a better job together.

The AAK ACADEMY offers wide range of courses. The format is highly flexible, with tuition by experts from staff at AAK.

Next AAK ACADEMY for Beauty and Personal Care, 20-21 September 2011 in Karlshamn, Sweden.

The Academy is free for all AAK customers. If you would like to participate or know more about the programme, contact your AAK partner.

More information available at www.aak.com

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Making safe, pure and functional emollients from vegetable oils



From seeds to purified and safe vegetable oil.

The beauty and personal care industry is facing new challenges daily. It is not enough to know what the consumers will prefer this year: there are also a large number of regulatory issues that need to be considered. Legislators are concerned about the safety of cosmetic preparations and the use of chemicals, and new criteria frequently come up.

Natural ingredients, such as vegetable oils used as emollients, are often regarded as less pure and more variable than synthetic ingredients. However, if you take care to source good raw materials and purify the oils in the right way, high and consistent quality can be achieved.

Vegetable oil-based emollients from kernels, seeds and fruits

When purifying vegetable oils to make ingredients for beauty and personal care applications, care must be taken to start with good raw materials. If the seeds, kernels and fruits are damaged or carelessly handled, no subsequent processing can put that right.

The first step in converting an oilseed to an emollient is to get the oil out of the seed. This is done by grinding the seed and applying pressure to expel the oil. Mechanical extraction is often followed by solvent extraction to maximise the yield of oil from the seeds. Many oilseeds contain too low a level of oil to permit only mechanical extraction, and solvent extraction is necessary to get out any oil at all.

Purification removes irritants and environmental pollutants

The crude oil contains a number of undesirable components. Free fatty acids, resulting from

enzymatic hydrolysis in the mature oilseed, acidify the oil and may form soaps in the finished formulation unless removed. The free fatty acids may also be irritating on the skin. The free fatty acids are removed by washing with water at high pH.

Oxidation products such as lipid hydroperoxides are also a possible source of irritation and comedogenesis. Most peroxides in vegetable oil are removed by adsorption on a clay mineral, which also efficiently removes chlorophyll and other pigments. This step is also important because it removes proteins from the oil, removing the risk of allergic reactions. Environmental contaminants such as heavy metals from soil and polyaromatic hydrocarbons from air pollution are also removed.



Soft processing preserves the level of vitamin E and phytosterols

The final step in the purification process is called deodorisation. The last traces of free fatty acids and smelly components are removed by steam distillation at low pressure. The AAK

'soft processing' concept makes sure that the contaminants are removed while keeping the desirable bioactive lipids in the oil. Vitamin E, phytosterols and triterpene esters (in shea butter) are components we make sure are retained in the oil.

Vegetable oil-based emollients are safe for the user and the environment

Making sure that our ingredients are safe for the user is of the highest importance for AAK. This means that we keep track of possible contaminants and that they are removed to meet our high standards. Our vegetable oil emollients have also been tested for skin irritation in human repeated insult patch tests, showing no adverse results. This is not surprising as the triglycerides that remain after purification closely resemble the lipids present in healthy skin. Triglycerides are also safe from an environmental point of view. They are rapidly broken down to fatty acids and glycerol, which are readily biodegradable and do not accumulate in the environment.

Safe, pure and functional

Well-purified vegetable oils play an important role in modern skin care formulations. They can be used as a basic emollient, bringing softness and moisturisation. They can also modify the sensory aspects of the lotion or cream. Vegetable oils are also important ingredients for making your formula a success on the market by providing interesting storytelling opportunities. Whatever your reason for using a vegetable oil in your formulation, it should be purified to the highest available standards. In short: Lipex quality.

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