The Next Generation of Shea Butters: Improvements for Modern Cosmetic Formulations

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Abstract

The good emolliency and high moisturising capacity of shea butter are two reasons why it has become a very popular ingredient in cosmetics and personal care applications in the last few years. An additional functionality in shea butter is the skin healing and anti-inflammatory action attributed to triterpene cinnamates. Shea butter also comes in many physical forms so it is also easy to formulate with, particularly if one of the butters especially developed for cosmetic applications is used.

Our Shea Butter Family is now extended with Lipex® Sheasoft, a cosmetic ingredient where all the good properties of shea butter are combined into one. Stable and rapid crystallisation behaviour, high substantiated moisturisation capacity, elevated triterpene ester content and a soft silky skin feel are the benefits you get when formulating with Lipex® Sheasoft.

Lipex® Sheasoft stabilises rapidly in the preferred beta crystal form, exhibiting a high melting point (51ºC) and improved high temperature stability. The moisturisation capacity was evaluated in an *in vivo* study with human volunteers, and showed improved barrier properties and rapid remoisturisation after a challenge. The triterpene ester content is approximately twice as high compared to traditional shea butters. Formulating with Lipex® Sheasoft is easy, regardless whether the formulation is based on esters, mineral oils or silicones. In all cases Lipex® Sheasoft will contribute to an improved skin-feel.

Introduction

The many faces of Shea Butter

Shea butter is obtained from the dried kernels of the shea tree (also known as the karité tree) which grows in the semi-arid savannah of sub-Saharan Africa. The botanical name of the shea tree has recently been changed from the well known *'Butyrospermum parkii'* to the scientifically correct *'Vitellaria paradoxa'* as a result of a review of the history of the discovery of the shea tree by European botanists in the 19th century. For cosmetic uses the old botanical name will live on as the accepted INCI name for shea butter is still *'Butyrospermum Parkii'*.

The shea butter trade is a very important factor for the economy of the communities in this area and it has a very long history as a source for edible fat and for skin treatments. The harvesting of the wild growing shea kernels provides a valuable cash crop and a source of auxiliary income for the communities in the shea belt. The original unrefined shea butter is a yellowish paste with a characteristic odour and refining is normally required to produce an ingredient suited for cosmetic use. Refining and deodorisation removes impurities such as metals from the soil and processing equipment, polyaromatic hydrocarbons derived from the roasting and drying of the kernels and proteins extracted with the oil. The refining and deodorisation process also removes free fatty acids from several percent in the crude shea butter to less than 0.5% in the finished product.

The shea butter can be further processed into a variety of ingredients with improved functionality and today several qualities of shea butter tailored for cosmetic use are available from us. Properties such as the melting point and melting profile as well as the content of unsaponifiable matter can be optimised to meet requirements from different cosmetic applications. Liquid shea butter is ideal for light formulations and for cold processing while semi-solid butters are better suited for heavier formulations and for fine-tuning the consistency of the formulation. The selection of a shea butter ingredient in a formulation depends usually very much on the type of formulation, its desired sensory profile and the positioning of the formula on the market. Shea butter can be used both as a well known label ingredient or marketing accent but also because it brings functional benefits to the formulation. The functionality is linked to either the triglyceride composition of shea butter or to its content of bioactive triterpene esters.

Chemistry of shea butter: Triglycerides and triterpene esters

Vegetable oils and fats, including shea butter, are esters of glycerol and fatty acids, also known as triglycerides. However, shea butter also comprises very high levels of non-glyceride components, normally summarised by the collective term 'unsaponifiables' or 'unsaponifiable matter'. A typical vegetable oil such as