Specialty Fatty Oils for Healthy Skin

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Abstract

Some specialty oils are considered in this article that are interesting for cosmetic application. Besides typical omega-6 and omega-3 oils derived i.e. from borage and chia seeds, there are other oils with less usual fatty acids like puninic acid and palmitoleic acid obtained from pomegranate seeds and seabuckthorn pulp. In case of amaranth, millet and wheat bran, more specific lipid components like squalene, miliacin and resorcinols form part of the lipid composition, which in all cases is rounded out by the presence of more or less phytosterols and tocopherols as typical by-products. The effectiveness of such lipid components in cosmetic application is described on the basis of recent literature evidence.

Introduction

Plant oils are base ingredients in skin care cosmetics, especially in natural cosmetic products where paraffin and silicon oils are less accepted. Vegetable oils offer the advantage of being food products at the same time. Orally taken they improve conditions of dry and sensitive skin, providing beauty from the inside. Topically applied they offer approved repairing, anti-ageing, healing or revitalising efficacy from the outside.

Vegetable oils, especially supercritical extracts, have a natural complex lipid composition, closely representing the botanical starting material. The natural composition combines different advantages which cannot be found in highly refined oils or single oil fractions. Benefits can be derived from rare and valuable fatty acids as well as from by-products like phytosterols, tocopherols, tocotrienols or from other more specific lipid components which vary in concentration depending on the material used.

Production of fatty oils

Fatty oils are obtained by different methods. Pressing is the simplest and cheapest approach. This method implicates in most cases high temperatures. Furthermore, the oil contains particles, gums and humidity which have to be removed in subsequent steps. The most obvious restriction is, however, the oil content of the starting material. If this represents less than 10%, pressing is inefficient, especially in case of rare and more expensive raw materials since the oil recovery goes down to 50% or less. Accordingly, the bigger proportion remains in the oil cake and valuable by-products such as phytosterols or miliacin might not be recovered to the full content.

In such cases extraction is inevitable. Two options are well introduced today, hexane extraction which is used mainly for bulk amounts, and supercritical CO_2-extraction which is the method of choice for specialty oils. Hexane extraction requires more or less refinement steps like degumming, bleaching and deodorisation for removing residual solvent amounts which are connected to stress, loss or degradation of vital components. Hexane extracted oils are not generally accepted in natural cosmetics and they cannot be certified organic.

In contrast, CO_2-extraction works under gentle conditions and exclusion of oxygen and eliminates any solvent residue problem. The method recovers all neutral lipids as well as lipophilic by-products like carotenes, phytosterols, tocopherols etc. but no phospholipids. If some more polar lipids should be desirable, there remains the option to use a small amount of ethanol as entrainer, which fits within the CO_2-extraction philosophy and maintains the advantage of general acceptance e.g. according to ECOCERT or BDIH standards for natural cosmetics. In most cases supercritical oils don't need further refinement steps. They have authentic high grade composition without loss or degradation of sensitive constituents and offer the possibility of organic certification.

Our company as producer keeps high standards by milling and conditioning the seed material straight before extraction and by adding its own supercritical rosemary antioxidant immediately after production. Rosemary provides the advantage of not only retarding oxidation, it is also an anti-ageing, anti-inflammatory