Innovative Organic Lipids in Filtering the Chemistry in Cosmeceuticals

Author: Dr. Vijai K. S. Shukla, International Cosmetic Science Centre ApS, Lystrup, Denmark

Introduction

Organic food is defined as a product of a farming system which is produced by avoiding the use of man-made chemical fertilizers, pesticides, growth regulators and livestock feed. The system should basically rely on crop rotation, animal and plant manure, some hand weeding and biological pest control. Organic fertilizers release the nutrients with time and are less likely to be washed out compared to synthetic fertilizers. Most organic fertilizers are by-products of the food industry and are devoid of synthetics.

Medicines and food have a common origin. This ancient Japanese proverb is, in one form or another core to the medical folklore of almost all cultures around the globe. Modern science, however, is only now beginning to provide solid scientific evidence for this very concept. There is ample body of evidence that certain vitamins and particularly their antioxidant activities can help prevent or delay the onset of diseases such as heart disease and cancer. However, a host of nonnutritive components of plant foods, especially polyphenols and phytoestrogens have come to be recognized as “chemopreventers” (i.e., naturally appearing chemical components with the strong capacity to prevent certain diseases).

We all should strive for enhancing individual beauty without threatening the beauty of our planet. In recent years natural products have grown from a niche segment to one of the fastest growing categories in personal care. In fact natural personal care (NPC) has outperformed other natural product segments such as functional foods and supplements. Growth of NPC will continue following the growth of the nutraceutical market as the consumer drive continues towards natural products offering more value for money.

Although all attempts are being made to replace petroleum-based products with natural ones, the substitution is far from complete, owing to the lack of in-depth knowledge of the raw materials as well as product formulations and stability. Application of natural oils and fats was severely restricted due to oxidative degradation of lipids resulting in malodours, colour changes, viscosity increases, and changes in specific gravity, solubility and appearance. We recently described the technology of development of a unique means of stabilization of exotic butters and natural oils, thus avoiding any cumbersome application of antioxidants and avoiding heating, homogenisation, extra labour, and handling of additional powders. (Cosmetic Science and Technology 2005)

While using natural oils and butters, one can use either the properties of triacylglycerol constituents or nontriacylglycerol components (chemopreventers) or both as per the specific requirements of the product formulation in question. This paper deals with the art of engineering organic lipid products employing both the above characteristics.

Nontriacylglycerol constituents

The triacylglycerol constituents of fats and oils generally co-exist with non-triacylglycerol components, and these are represented mainly by unsaponifiable matter. Table 1 summarises the content of unsaponifiable matter in selected oils. Among other oils, shea butter, oat oil, neem oil, and avocado oil contain high amounts of unsaponifiables which are non-fatty compounds. Shea olein fraction may contain up to 12% unsaponifiable matter.

Oil	Unsaponifiables
Soybean	1.5
Canola/rapeseed	2.0
Sesame	2.0
Avocado	4.5
Neem	5.0
Oat	6.0
Shea	6.0
Wheat germ	3.0
Rice bran	3.5
Evening primrose	1.5
Borage	1.2
Black currant	1.2
Palm	1.2
Sal	1.5
Sunflower	1.0
Grapeseed	1.0
Almond	0.5
Hazelnut	0.5
Castor	0.5
Coconut	0.2

Table 1: Content of unsaponifiable matter in selected oils (%)