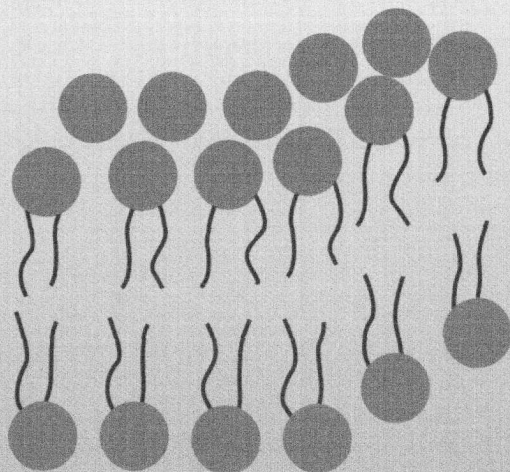


kosmetikos*

(continued from page 20)

raw materials to create phospholipids (Figure 2). The phospholipids form bilayers which constitute the thin membrane surrounding

Figure 3 Lipid Bilayer



individual cells (Figure 3). Phospholipids with saturated fatty acids can pack tightly into rigid membranes. Phospholipids with unsaturated fatty acids can't pack as tightly because of the bends in the chains, and thus create more flexible membranes.

Every vegetable oil has a unique story. *Global Cosmetic Industry* (formerly *DCI*) readers were treated to an excellent article on pistachio nut oil in February 1997³. Borage oil and evening primrose oil are prominent sources of EFAs. Some oils, such as olive oil, are relatively poor in EFAs. Table 1 shows these oils in comparison to another interesting vegetable oil, that derived from the kukui nut. Kukui oil has also taken a star turn in *Global Cosmetic Industry* for those with longer memories.⁴

An enticing vegetable oil should be rooted in legends and the mist of prehistory: "The kwan-

Table 1 EFA Content

	Linoleic	Linolenic	Total EFA
Borage	38	25	63
Evening Primrose	71	9	80
Olive	8	1	9
Pistachio	32	1	33
Kukui	44	33	77

gle pod seed yielded a sacred balm which was ceremonially spread on the thighs of the warrior-chieftains of Boa-Buanga prior to sacred combat. Recent studies show it to be high in behenic acid..."

Aleurites moluccana, the kukui nut tree, is the state tree of Hawaii. Kukui seeds have not been found there in geological deposits, so it is assumed that the tree was introduced by the early Polynesian settlers. The native population discovered the use of the oil from the seed to alleviate sunburn and irritation.

The kukui nut was also essential for the creation of leis so precious that only the Hawaiian nobility, the Alii, wore them. Small holes were drilled in the nuts, which were then buried. Ants ate the kernels. After a few months the shells were recovered and ground to a high polish. Try doing that with an olive...

Kukui oil, with triglycerides rich in EFAs, is placed on the skin. Research indicates good penetrating power of the oil into the upper layers of the skin.^{5,6} We need the fatty acids, not the triglycerides, to enhance the lipid barrier. Enzymes in the skin break down the oil into useful forms. The restored lipid layer is soft and flexible, TEWL is healthy, minor irritations are healed.

Every vegetable oil available for cosmetic use has unique properties. An associated legendary use is always nice. Oxidative stability, competitive pricing and stable supply are necessary. To satisfy the functional needs of the formulation, the details of fatty acid distribution are critical. The EFA content is surely one aspect that can give an edge to skin treatment, and as a bonus it is natural additive. ■

References

For a detailed technical resource, see: Suddaby, Don, *Essential Fatty Acids: A review of their biochemistry, function, interaction and clinical applications*, Croda Universal Ltd., Hull, nd.

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