

THE MAGIC OF MACADAMIA **UNCOVERING ITS POTENTIAL FOR THE COSMETICS INDUSTRY**

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Buoyed by increasing consumer interest in ingredient origin and a growing preference for all things natural, the market for natural and organic cosmetics is showing significant potential. With volume predicted to reach €2 billion in 2010,¹ the sector's year on year growth looks set to continue well into the future.

To ensure products deliver the natural and organic credentials to resonate with discerning consumers, cosmetic manufacturers require effective organic ingredients which also deliver the necessary functionality and benefits. But with a seemingly unending list of raw materials at their disposal, selecting these ingredients is no simple task. And, after this selection is made, how can they be sure that the chosen ingredients meet the essential natural and organic standards?

Here, we examine the macadamia nut, a fascinating ingredient whose oil has demonstrated clear benefits in cosmetic applications. We also look at the sourcing of this ingredient, and how, by working with suppliers like Earthoil, manufacturers can be confident that their products will deliver the organic and ethical credentials demanded by many consumers.

The nut from down under

A genus of nine species of flowering plants in the Proteaceae family, the macadamia is an evergreen tree which grows up to 12 metres tall. It bears a hard, woody globose follicle with a pointed apex, containing one or two seeds. These nuts are a valuable food crop. Only two of the species, *Macadamia integrifolia* and *Macadamia tetraphylla*, are of commercial importance, however.

Macadamia integrifolia originates in Australia. In fact, it is the only plant food native to Australia that is produced and exported in any significant quantity. Today, Australia is the world's largest commercial macadamia producer. The nuts have been eaten for thousands of years by the Australian Aborigines who named the nuts 'gyndl' or 'jindilli'. Records show that they used to trade the nuts with early white settlers along the coast of Eastern Australia.

The first commercial planting of macadamia trees was in 1882 in northern New South Wales. This was around the same time that the macadamia nut was introduced overseas for the first time – into Hawaii. Macadamia is now naturalised in many countries around the world and is commercially produced in Kenya, South Africa, Malawi, California, Brazil, Costa Rica, Bolivia, Colombia, New Zealand and Israel.

¹ Organic Monitor, February 2010

Nutritional potential

The Aborigines were the first to understand the nutritional potential of the macadamia nut; they found it to be a good portable source of protein. Macadamia nuts actually contain the highest amount of beneficial monounsaturated fats of any known nut. They also contain nine per cent protein, nine per cent carbohydrate, two per cent dietary fibre, as well as calcium, phosphorus, potassium, sodium, selenium, iron, thiamine, riboflavin and niacin.

For cosmetic applications, however, it is the nut's oil that is used and delivers the optimum benefit. Macadamia oil is the non-volatile oil expressed from the nut meat of the macadamia tree and then cold pressed. It contains approximately 60 per cent oleic acid, 19 per cent palmitoleic acid, one to three per cent linoleic acid and one to two per cent linolenic acid. Some varieties contain roughly an equal amount of omega-3 and omega-6. Although macadamia is cultivated in many different parts of the world, the oil's fatty acid profile is not greatly influenced by environmental factors.

Macadamia oil is liquid at room temperature. The refined oil is clear, lightly amber-coloured with a slightly nutty odour. It is possible to refine it to complete transparency, but the faint odour of macadamia nut remains.

Not just skin deep

Thanks to its fatty acid profile, which is very similar to that of human sebum, macadamia oil has good emollient properties. It is non-greasy with the ability to penetrate the skin's epidermis. Macadamia oil also contains one of the highest levels of palmitoleic acid – or omega-7 – which is known to soften and promote skin elasticity.

Macadamia oil's rich texture and high oxidative stability make it especially suitable for thick creams and sun care formulations. Its high concentration of palmitoleic acid makes it particularly beneficial for dry or more mature skin. This acid is naturally present in human sebum of young individuals; the amount reduces considerably, however, as one ages. As well as its softening and moisturising properties, macadamia oil can also help in the healing of mild wounds.

The oil has also been shown to exhibit significant benefits in hair care products. It is easily absorbed into the hair follicles and scalp which can strengthen the hair.

Going organic

The benefits of macadamia oil for cosmetic applications are clear but how do manufacturers ensure that the oil they use fulfils the organic and natural requirements desired by an increasing number of consumers?

Manufacturers must look to suppliers with proven organic credentials to deliver this fundamental requirement. Earthoil, for example, has an extensive portfolio of organically-certified pressed and essential oils plus other natural extracts. The company is also committed to the principles of ethical and fair trading.

Earthoil's macadamia oil is derived from nuts sourced from small-scale African farmers in the Kenyan highlands – these are often the rejected nuts from the food grade traders. Earthoil collects these nuts in shell at designated points. The company then transports them to its own facility, where the nuts are cracked and processed into cold pressed oil. Earthoil supplies both organic certified and conventional macadamia nut oil, and has a production capacity of around 200 metric tonnes of cold pressed oil each year.

Table 1 highlights the fatty acid profile of Earthoil's macadamia oil. It can be seen that the oil contains particularly high oleic acid levels. This gives the oil its skin repairing properties.

Fatty Acid	Common Name	Peak Area (%)
14:0	myristic	0.6
16:0	palmitic	8.5
16:1	hexadecenoic	22.5
16:3	hexadecatrienoic	0.1
18:0	stearic	3.4
18:1	oleic	55.7
18:2	linoleic	2.0
18:3	α -linolenic	0.2
20:0	icosanoic	2.9
20:1	icosenoic	2.6
22:0	docosanoic	0.9
22:1	docosenoic	0.2
24:0	tetracosanoic	0.3
	minor components	0.1

The approach adopted by Earthoil has enabled the small-scale farmers to establish a separate income stream not open to them previously. This assistance has helped to make macadamia nut farming a viable industry for these marginalised farmers.

Summary

As a sector set for sustained growth, the natural and organic cosmetics industry is one of significant potential. Manufacturers looking to maximise their opportunities in this market should look for ingredients with clear benefits from credible sources. This will ensure they formulate products that carry the organic stamp so attractive to consumers yet still deliver the required functionality.