

New method could stop shark oil being used in cosmetics and vaccines

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A new method of analysing squalene and squalane, oils often used in the production of cosmetics and vaccines, can show whether they came originally from the liver oil of deepwater sharks or from olive oil.

In 2006 the European Union imposed deep-sea shark fishing limits in the North-East Atlantic, and since 2008 some important cosmetic firms have declared that they have stopped using shark squalane. Up to now however there has been no way that a manufacturers could determine whether the squalene or squalane they are using has come from [sharks](#) or olives, but the new scientifically validated method announced in this month's edition of *Rapid Communications in Mass Spectrometry* will reveal the source.

Squalane is used as an emollient and a hydrating agent in many cosmetics, and squalene is used to increase the power of the vaccines.

Currently thousands of endangered deep sea sharks are killed each year purely to supply a cheap source of these oils, with squalene being the second most sought after raw product of sharks after their fins. A technique does exist to extract these compounds from vegetable sources such as olive oil, but shark-derived squalene offers a higher yield and requires shorter processing times, therefore involving lower costs. Consequently there is a temptation for oil suppliers to keep on exploiting sharks.

"Our method will protect both cosmetic firms and consumers from

commercial fraud and will make it possible to promote the production of squalene from olive oil. It will also allow the origin of squalene within a finished product to be determined. Together, this will discourage the illegal fishing of deepwater sharks and thus contribute towards protecting sharks from the threat of extinction," says Federica Camin, who works at the IASMA Research and Innovation Centre Fondazione Edmund Mach, in San Michele all'Adige, Italy.

The method uses an Isotope Ratio Mass Spectrometer coupled to an Elemental Analyser or Gas Chromatographer/combustion system to measure the ratio of two different forms of carbon (Carbon-13 and Carbon-12). In the study published in this month's paper, the team of researchers analysed 13 authentic samples from olive oil (from Spain, Italy, France and Turkey) and 15 samples from shark liver oil (from Spain, Portugal, Japan and Korea), therefore representative of the production area of squalene. The Carbon-13/Carbon-12 ratios were significantly lower in authentic [olive oil](#) than in shark samples.

"The new method could be proposed as an official way of detecting whether any batch of squalene or squalane has come from animal or plant sources, allowing manufactures to make clear claims about the ethical status of their products," says Camin.

More information: "Stable Isotope Ratios Of C And H To Distinguish Olive Oil From Shark Squalene-Squalane" Federica Camin, Luana Bontempo, Luca Ziller, Cristiana Piangiolo, Gianni Morchio. Rapid Communications in Mass Spectrometry; 2010 [DOI: 10.1002/rcm.4581](https://doi.org/10.1002/rcm.4581)

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