

# Method developed for adding omega-3 fatty acids to foods

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The omega-3 fatty acids contained in fatty salt-water fish are an important component of a healthy diet in humans. Despite being aware of this fact, Germans still do not eat enough fish. Now Fraunhofer researchers have developed a method that allows omega-3 fatty acids to be added to popular foods. They are launching the first of these products exclusively in EDEKA stores: the omega-3 sausage.

Our bodies need fat. They use it to repair their cells and store energy. [Omega-3 fatty acids](#) are especially important. They play a particularly large role when the body is regenerating heart, brain, and [nerve cells](#). Especially valuable are unsaturated fatty acids such as docosahexaenoic acid ([DHA](#)) and [eicosapentaenoic acid](#) (EPA). Not only are they easily absorbed into cells, they also have an anti-inflammatory effect. "Unlike saturated varieties, which are present in butter for example, unsaturated fatty acids are capable of reacting in the body," explains Christian Zacherl from the Fraunhofer Institute for Process Engineering and Packaging IVV in the Bavarian town of Freising. "This is because of their [molecular structure](#), which enables them to capture and neutralize pro-inflammatory substances."

## Germans do not eat enough fish

Unable to produce these important fatty acids by itself, the human body has to absorb them from food. DHA and EPA are present, for example, in fatty salt-water fish such as herring, salmon, and [mackerel](#). But here's

the rub: according to a current survey commissioned by the German food retailer EDEKA, Germans know that omega-3 fatty acids are important and that fish contain them in a particularly high-value form, yet neither women nor men eat the recommended weekly amount of 150 to 220 grams of fish. "We thought that the surest way to solve this problem would be to increase the amount of effective fatty acids in popular foods that people eat in large quantities, such as pizza, pasta, bread, and sausages," says project manager Dr. Peter Eisner, describing Fraunhofer IVV's approach. "First, though, we had to deal with the fish smell issue."

Omega-3 fatty acids are virtually odorless in their natural form as they occur for instance in fresh fish or fish oil. If they come into contact with oxygen, however, they oxidize. The resulting degradation products have two drawbacks: the quality of the original substance diminishes and a fishy smell is produced. What was needed, therefore, was a process that locked in the precious fatty acids and protected them against oxidization. "This is what we achieved by means of a special emulsion system," explains Zacherl. "It optimally combines the effects of various anti-oxidants with each other." Some of the substances used are directly responsible for oxidization protection, while others support the effects of the first group, and yet others eliminate substances that accelerate the degradation process in fatty acids. "The oxygen has to clear a lot of hurdles before it can react with the omega-3 fatty acids. Thanks to our method, the fatty acids remain stable and can be incorporated into a variety of foods. The emulsion can be adapted specifically to individual products. All we have to do, effectively, is vary the number and type of hurdles," says Zacherl. Fraunhofer IVV has patented its technology ([www.triomeg.de](http://www.triomeg.de)).

## **Omega-3 sausage in cooperation with EDEKA**

In conjunction with EDEKA, Fraunhofer IVV has now exclusively

launched the first of these products: the omega-3 sausage, which has been on the market since mid-April and is produced in EDEKA meat processing plants. "The new omega-3 products underscore EDEKA's nutritional and gourmet expertise. At the same time, the cooperation with Fraunhofer IVV shows that EDEKA is a major driver of innovation in the German food trade," says Markus Mosa, CEO of EDEKA AG. The food retailer has included the omega-3 sausage in its own-brand range and is initially offering nine different varieties: Bavarian white sausage, Bavarian meatloaf in thin and thick slices, Lyon sausage, Lyon sausage with paprika pieces, "bierschinken" ham sausages, a "Gourmet Trio" package of three different cold sausages, wienerwurst, and boiled bratwurst. Not only do the sausage varieties contain particularly high amounts of DHA and EPA, their overall fat content is well below that of comparable conventional products. "We use specially processed fish oil that contains by itself over 90 percent of valuable [fatty acids](#)," explains Eisner. "For comparison: the original product contains only 30 percent. Because we optimized the fat balance in general, EDEKA was able to reduce the total amount of fat. And despite the added value in terms of health benefits, the sausages are just as tasty as their "regular" counterparts."

Provided by Fraunhofer-Gesellschaft

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