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Environmentally-friendly packaging made of chitosan from shrimp shell. (Photo Credit: Nofima)



Marie Christine Monfort

Boosting women in seafood and ending gender inequality. A call to the seafood community: time for commitment and change is now!

Can natural plastic be made from shrimp shells?



NORWAY

Monday, May 06, 2013, 23:00 (GMT + 9)

Scientists at [Nofima Mat, the Norwegian Institute of Food, Fisheries and Aquaculture Research](#), are participating in a major EU-financed project in which "active" packaging based on raw materials from shrimp shell improves and conserves food products – and after use the packaging biodegrades.

Environmentally stubborn plastic is getting competition from biodegradable packaging made of chitin and chitosan from shrimp shell.

Nofima's part of the project equates to around NOK 1 million (EUR 131,317) over a two-year period. Together with the coordinator, Italian company Mavi, the majority of the project involves four medium-sized companies in EU and three research centres.

"Our job is to ensure food contact safety in the project and quantify the effect on bacteria. Chitosan used as an integrated part of the packaging can have an antibacterial effect on the food products," says Morten Sivertsvik, Director of Research at Nofima's department for Processing Technology in Stavanger.

"The EU has strict regulations in this area, and our role is to see that the active packaging has a positive and not a negative impact on the food products. The chitosan-based fibres that are used in the packaging are based on nanotechnology, so we are talking about minute particles that by no means have to break down so they come in the food products."

2/3 of the world's packaging

The website of the EU project-Chitopack outlines the perspectives of the shrimp shell-based packaging.

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The food sector (including beverage industry) accounts for approximately two-thirds of global packaging. Around 50 per cent of this packaging is made of non-biodegradable plastics, which causes ecological imbalance and aesthetic deterioration of nature.

At the same time being a petro-chemical based product, plastics rely on an expensive and non-renewable natural resource with a relatively low environmental factor and high CO₂ footprint.

Resource management

Bioplastic is a promising alternative that arises from potential raw materials such as chitosan from the fishery industry, which is mostly used in cosmetic lotions owing to its inherent antibacterial properties.

Chitosan waste exceeds 25 billion tonnes per year and is hazardous due to its high perishability and polluting effect, both on land and at sea.

The website also emphasizes that there is a requirement for innovation within the small and medium-sized enterprises in the packaging industry in Europe. This industry is under pressure to reduce costs and respond to environmental concerns.

Nanofibre

New research from a research institute in Prague led to a global patent (MAVI) on nanofibre based on chitin, which opens new possibilities for chitin as an ingredient in biopolymers to replace plastic.

The products range from hard bioplastic, which is just as robust as other plastics, to thin film that can come in direct contact with food products. The aim of the Chitopack project is to expand on the positive properties of chitin nanofibre in the development of new food packaging.

The packaging is biocompatible, 100 per cent naturally biodegradable and satisfies EU requirements for small and medium-sized enterprises.

Source: *Nofima*

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