SKINCARE PRODUCTS WITHOUT STICKINESS OR ALLERGENS

Image "The experiments at MAX IV Laboratory showed what effect different treatments had on our emulsions", says Malin Sjöö, co-founder of Spexímo.

Research company Spexímo has developed its own method for making stable emulsions without using chemicals. Areas of application include skincare products, medical ointments and food. Experiments at the MAX IV Laboratory provided new knowledge which could form the basis of new, commercially viable products.

The vast majority of skincare products – creams, lotions, sunscreens, etc. – are emulsions which contain both water and oil in microscopically small droplets. In order for the emulsion to remain stable, chemicals are added to the product. This makes many skincare products unusable for people with allergies and it also burdens the environment. Spexímo is a research-based company that has developed a completely new method in which ordinary food starch is used as a stabiliser instead of chemicals.

Malin Sjöö is a senior lecturer in Food Technology, an expert on starch and one of Spexímo's founders.

Image Speximo has developed their own method for making stable emulsions without chemicals.

"I worked together with other researchers on a project which dealt with how to use starch to encapsulate bioactive substances in food. We tested starches from many different plants and discovered that quinoa starch was the best at encapsulating oil in water. We had found a new way of making fine emulsions. This led us to other areas of application and cosmetic products were an obvious choice as they are often based on emulsions. This proved more successful than we expected – quinoa-based skin creams are quickly absorbed by the skin, with no stickiness."

At some point, most of us have eaten quinoa, which is used as an alternative to rice or pasta in salads, for example. From the researchers' point of view, what is unique about this South American plant is that the starch particles are uniform and of precisely the right size. This provides an efficient encapsulation of the oil droplets and a smooth and fine product.

THE QUINOA STARCH BARRIER

Currently, Speximo is working on tailoring emulsions for the three areas of Personal Care, Pharmaceuticals and Food. Experiments at the MAX IV Laboratory made it possible to study in detail the barrier that quinoa starch builds against the oil droplets.

"The more we know and understand about the starch barrier, the better we will become at tailoring our products for different areas of application. The experiments at the MAX IV Laboratory gave us the chance to acquire more knowledge about how the starch barrier is affected by various parameters such as heat and storage time", says Malin Sjöö. "The experiments enabled us to see what effects various treatments had on the properties of the starch barrier and this can be very useful to us in the further development of our product."

"The experiments at the MAX IV Laboratory gave us new knowledge at a detailed level of our quinoa starch-based emulsions. This means that we have obtained good references for the further development of skincare products, pharmaceuticals and food without unnecessary chemicals."

Malin Sjöö, co-founder Spexemo

DETECTING PATTERNS OF NANOMATERIALS

Speximo's experiments were conducted at the I911-4 beamline at the MAX IV Laboratory. The beamline is equipped for SAXS (small-angle X-ray scattering) – a method particularly suitable for experiments with nanomaterials, such as Speximo's starch barriers. The nanomaterials can vary and are incorporated in both solids and liquids.

The method got its name from the process in which an X-ray is allowed to scatter in the sample and is then detected by a two-dimensional detector a couple of meters further away. The pattern that emerges on the detector contains information on the nanomaterial in the sample, such as its form and interrelationship.

For further information visit
science-link.eu

Science Link is a network between leading research facilities of photon and neutron sources and its users. The project aims to support and encourage innovation and entrepreneurship in the Baltic Sea Region. Apart from the research facilities, the network also includes scientific institutes, universities and regional organisations that serve as service and promoting units. Science Link is part-financed by the European Union (Baltic Sea Region Programme) and involves 17 partners from 8 countries during the project period 2012 to 2014.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund)

Research facilities

DESY
HZB Helmholtz Zentrum Berlin
Helmholtz-Zentrum Geesthacht
Centre for Materials and Coastal Research
MAX IV LABORATORY