

Manufacturing superfoods – how science is enhancing healthy food

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Enhancing the bioactive ingredients in our food could help our immune systems fight disease, scientists say. Image: Shutterstock/margouillat

Rice, olives, tomatoes – healthy foods are getting a boost as scientists find ways to enhance ingredients that can keep the doctor away.

Whether it's fermenting olives to stimulate the growth of friendly bacteria, or extracting health-promoting ingredients from rice starch, researchers are delving into nature's medicine cabinet, and the treatments they have found could help change the way we keep healthy.

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'Everybody knows that cardiovascular disease, obesity and diabetes mostly come from eating,' said Professor Annalisa Tassoni of the University of Bologna in Italy, who coordinates the EU-funded BIORICE project. 'People are looking to cure themselves avoiding chemicals.'

'When you look in the newspapers, you hear the word natural a lot. Natural depends on how the food is produced. The idea of our process is to not use anything that is not safe for people – no isolating processes that need solvents or chemicals. We will do it all by physical treatments.'

The idea behind the project is to extract bioactive ingredients such as peptides from the protein

by-products of rice starch processing. These can then be used in food, cosmetics and nutraceuticals - foods that provide health benefits beyond their basic nutritional value.

The project is now halfway through and currently in the process of examining the peptides that have been already been discovered to identify how they could be used commercially. The next phase is moving from laboratory scale to industry scale.

Prof. Tassoni believes that in 20 years' time, the peptides they have discovered could be used to enhance food. 'As an Italian I think we could still eat the good food that we produce but we could also integrate something more,' she said.

Bacteria

Another group of researchers is looking into how bacteria can help us reap the benefits of the carotenoids found in tomatoes. Carotenoids are known to help prevent cardiovascular disease but they are not resistant to the acidity of the stomach, meaning that in order to get a small amount of carotenoids you need to eat kilos of tomatoes every day.

The EU-funded CaroDel project is developing an efficient way to deliver carotenoids to the lower part of the stomach where they can be absorbed.

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'Functional foods should not be perceived as a drug.'

Dr Massimo Marzorati, coordinator,CaroDel

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'The idea of the CaroDel project is that these carotenoids are protected inside the bacteria so the bacteria act as a capsule,' said Dr Massimo Marzorati, the project's scientific adviser.

At the moment they're testing how the absorption takes place. In the second year of the project they plan to conduct clinical trials to show that the concept works well.

If they are successful, it means a wide range of foodstuffs could be produced to contain carotenoids protected in their bacteria capsules, potentially allowing those at a greater risk of cardiovascular disease to easily consume their health-protecting properties.

Researchers are also looking at the bacteria found on health foods themselves to find a way of increasing their potency. The EU-funded PROBIOLIVES project has developed a way to produce probiotic olives by fermenting them with probiotic bacteria already found in the olives' skin or flesh, which can bring health benefits in areas as diverse as the gastrointestinal system, cholesterol levels, the immune system, allergies and inflammatory reactions.

'It is not just a food you add probiotics to, these probiotics come from the original microflora of the product,' said Dr Chrysoula Tassou, the project's coordinator.

These research initiatives are just the beginning. The Funcfood project is working to investigate how plant-based ingredients can protect against age-related diseases, while the MAREX project has turned to the sea, screening compounds found in everything from algae to sea anemones and fish for their anticancer, anti-inflammatory, antiviral and anticoagulant properties.

‘Functional foods should not be perceived as a drug,’ said CaroDel’s Dr Marzorati. ‘It’s not that you’re going to take a specific ingredient and the aim is to cure a disease. They are to improve the general health of the body – trying to eat something that can have a positive effect in your organism and eventually keep you from getting a disease.’

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