Useful oddball in our guts to be nutritional supplement

Akkermansia, a Wageningen discovery, is the only benign mucus eater in our intestines and could help us lose weight. This bacterium is expected to be marketed as a product next year.

The European Food Safety Authority (EFSA) approved the intestinal bacterium *Akkermansia muciniphila* for use as a nutritional supplement in pasteurized form last September. Clara Belzer, an associate professor of Microbiology, is pleased with the approval and calls it a major step given the bacterium's history and potential. She joined the research team of Willem de Vos, then professor of Microbiology and the man who discovered the bacterium, 11 years ago. She is trying to figure out how the bacterium works in the intestines.

Akkermansia is found in larger numbers in thin people and probably has a big influence on people's weight. Together with researchers at UCLouvain in Brussels, Willem de Vos's group carried out a trial with mice that were given live *Akkermansia*. The mice gained much less weight than mice without this bacterium. The bacterium is an oddity as it belongs to a very different family to all the other gut bacteria. It also behaves like a pathogenic bacterium yet it has a positive effect on the host, as Belzer explains. '*Akkermansia* feeds on the intestinal mucus but has a positive effect: it causes the host to make more mucus. It's a positive feedback mechanism.'

On the market

The mouse experiment was followed by trials with people with overweight. The trial subjects could carry on eating as normal and were given live or pasteurized Akkermansia, or a placebo. They did not lose weight during the two-week and six-week trials, but the people taking Akkermansia did have a healthier profile for their blood and urine. For example, the blood contained less cholesterol and had improved blood sugar levels.

Trial subjects who drank *Akkermansia* had healthier blood and urine profiles

The trials showed that the bacterium is safe for consumption, so the EFSA approved the use of pasteurized Akkermansia as a nutritional supplement. The Belgian company A-Mansia Biotech, founded by Willem de Vos and Patrice Cani of UCLouvain, plans to launch the first pasteurized *Akkermansia* product on the market next year.

In her basic research on *Akkermansia*, Belzer aims at discovering the mechanisms through which the bacterium affects human health. 'It is unlikely that everything in the intestine is determined by one bacterium, such as *Akkermansia*. You can see the intestines as an ecosystem in which a variety of bacteria and micro-organisms work together.' Belzer is therefore looking for the core set of bacteria that are found in all people. She expects it will take at least ten years before she has made a bacterial community that is applicable for humans. SS

Willem de Vos is now a distinguished professor emeritus. He works at Helsinki University on Akkermansia *and other potentially probiotic bacteria such as* Anaerobutyricum soehngenii.