

Bacterium with grabber arms stops intruders

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Bacteria in drinks such as Vifit stop pathogens by using grabber-like arms to cling onto intestinal walls. This discovery is made by a group of Finnish, Belgium and Dutch researchers, under the coordination of Prof. Willem de Vos of the Laboratory of Microbiology (Wageningen University, The Netherlands). The results were published in the *Proceedings of the National Academy of Sciences* late last week.

The *Lactobacillus rhamnosus* GG (LGG) bacterium, often found in bacteria drinks such as Vifit, has gained a reputation worldwide for its positive health effects. That LGG makes the intestinal wall less penetrable for intruders is a fact which researchers have known for some time. 'LGG has an impeccable character', says de Vos. 'Its health effects have been proven again and again; we just didn't know how it works.'

It appears that LGG has grabber-like arms called 'pili' with a binding protein at their bases which enables them to adhere to the intestinal mucus lining. In so doing, the bacterium protects the [intestinal cells](#) and reinforces the barrier function of the intestine. Other bacteria strains or mutants without pili or binding protein are present in the intestine for much shorter periods.

'By binding to the intestinal mucus membrane, LGG remains longer - and therefore is longer active - in the intestine', explains de Vos. 'We think that LGG competes with pathogens which also adhere to the mucus membrane. The pathogens are defeated when there are sufficient LGG bacteria in the intestine: competitive exclusion.'

Now that the mechanism of the health effects of LGG is known, it seems logical to search for an LGG-variant which can stay in the intestine even longer.

'We could work on an LGG bacterium with more of that [binding protein](#), which enables it to be longer active in the intestine', says de Vos. 'That can be done with genetic modification, but traditional selection methods can also be used to pick out [bacteria](#) with this protein.'

Provided by Wageningen University

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