

Scientists create food ingredient that will make you feel fuller

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Scientists have developed an ingredient that can be added to foods to make them more filling.

In its first tests in humans, researchers at Imperial College London and the University of Glasgow found that the ingredient is effective at preventing weight gain in overweight volunteers.

The ingredient contains propionate, which stimulates the gut to release hormones that act on the brain to reduce hunger. Propionate is produced naturally when dietary fibre is fermented by microbes in the gut, but the new ingredient, called inulin-propionate ester (IPE), provides much larger quantities of propionate than people can acquire with a normal diet.

First, 20 volunteers were given either IPE or inulin, a dietary fibre, and were allowed to eat as much as they liked from a buffet. Those given IPE ate 14 per cent less on average, and had higher concentrations of appetite-reducing hormones in their blood.

Next, 60 overweight volunteers took part in a 24-week study in which half were given IPE as a powder to add to their food and half given inulin. One out of 25 volunteers given IPE who completed the study gained more than three per cent of their body weight, compared with six out of 24 given inulin. None of the IPE group gained more than five per cent of their [body weight](#), compared with four in the inulin group.

After 24 weeks, the IPE group also had less fat in their abdomens and livers compared with the inulin group. The findings are published today in the journal *Gut*.

Professor Gary Frost, who led the study at the Department of Medicine at Imperial College London, said: "We know that adults gain between 0.3 and 0.8 kilos a year on average, and there's a real need for new strategies that can prevent this.

"Molecules like propionate stimulate the release of gut hormones that control appetite, but you need to eat huge amounts of fibre to achieve a strong effect. We wanted to find a more efficient way to deliver propionate to the gut.

"This small, proof-of-principle study shows encouraging signs that supplementing one's diet with the ingredient we've developed prevents [weight gain](#) in overweight people. You need to eat it regularly to have an effect. We're exploring what kinds of foods it could be added to, but something like bread or fruit smoothies might work well."

Dr Douglas Morrison, from the Scottish Universities Environmental Research Centre at the University of Glasgow, said: "There is significant interest in how food components like [dietary fibre](#) interact with [gut microbes](#) to influence health, but much of the evidence we rely upon comes from laboratory and animal studies. It is often difficult to translate these findings directly into successful human interventions.

"Packaging propionate up to more efficiently deliver it to the large intestine has allowed us to make direct observations in humans that propionate may play an important role in weight management. These exciting findings could at last open up new ways to manipulate gut microbes to improve health and prevent disease."

Imperial Innovations, a technology commercialisation company focused on developing the most promising UK academic research, is working with Professor Frost and Dr Morrison on taking the ingredient to market. The team is exploring how to deploy the ingredient so it makes the biggest impact and has early commercial engagement with a number of food and ingredient manufacturers, and would welcome discussions with further interested companies.

The study was funded by the Biotechnology and Biological Sciences Research Council's (BBSRC) Diet and Health Research Industry Club (DRINC), which aims to help the food industry develop products that deliver enhanced health benefits for consumers. The club operates by establishing partnership between research funders and a consortium of food companies to support academic research.

Dr Celia Caulcott, BBSRC Director, Innovation and Skills, said: "This is an excellent example of the exciting discoveries being made thanks to DRINC funding that can help to improve our health and benefit society. By working closely with industry to identify research priorities, we are investing in discoveries that have a much better chance of moving out of the lab and into our lives."

More information: E.S. Chambers et al. 'Effects of targeted delivery of propionate to the human colon on appetite regulation, body weight maintenance and adiposity in overweight adults.' *Gut*, 2014. [DOI: 10.1136/gutjnl-2014-307913](https://doi.org/10.1136/gutjnl-2014-307913)

Provided by Imperial College London

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