

## GM crop DNA found in human gut bugs

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For the first time, it has been proved that bacteria in the human gut can take up DNA from genetically modified food.

However, the UK's Food Standards Agency, which commissioned the research, says that the overall findings are reassuring rather than alarming because the amount taken up was barely detectable and only occurred in special circumstances.

Nonetheless, opponents of GM foods say the results vindicate their warnings that this might happen, and that the risk of gut bacteria scavenging antibiotic resistance genes from GM food is no longer theoretical.

"This is a first," says Adrian Bebb of the Friends of the Earth. "We've said time and time again there's a risk of this happening. Now, they've looked just once and they've found it."

### Burger and shake

Harry Gilbert and colleagues at the University of Newcastle upon Tyne made the discovery, after feeding volunteers with a burger and a milk shake containing GM soya.

To see how the GM food was dealt with by different parts of the digestive system, he gave the food to 12 healthy volunteers and to seven volunteers who had previously had their colons surgically removed.

When he examined stools from the healthy volunteers, he found no traces whatever of DNA from the GM food. It had all been digested. Nor did he find any evidence that gut bacteria had taken up the DNA.

But when he examined waste products collected from the seven ileostomy bags, he found that up to 3.7 per cent of the GM DNA survived.

Crucially, in three of the seven, he found that bacteria had taken up GM DNA from the soya. But "despite exhaustive attempts", he could not isolate the precise bacteria which had taken up the GM DNA. He concludes that the DNA must have been taken up only by tiny proportions of gut bacteria.

### Destructive enzyme

To account for the differences between the "ileostomists" and volunteers with intact digestive systems, Gilbert's team speculate that DNA might survive the small bowel but gets completely destroyed in the large bowel. They say in a draft manuscript that people with ileostomies might produce less of the enzyme that degrades DNA.

As supporting evidence, they found that unmodified soya DNA survived in the small bowel as plentifully as the GM DNA. "It shows that the GM DNA acts in the body the same way as DNA from regular food," says a spokeswoman from the FSA.

In a separate experiment on colonies of intestinal cells, Gilbert's team showed that raw loops of GM DNA called plasmids can be taken up directly, but only by one gut cell in 3000.

Bacteria containing the same plasmids proved totally incapable of transferring their genetic cargo into the gut cells. "These data support the view that GM soya does not represent a significant risk to human health through gene transfer," says the Gilbert team.

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