

Great tasting low-fat cheeses and cakes could soon be on the menu

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Low-fat cheeses and cakes that are just as tempting as full-fat equivalents could be heading for supermarket shelves, thanks to fresh insights into how proteins can replace fats without affecting foodstuffs' taste and texture.

Funded by the Engineering and Physical Sciences Research Council (EPSRC), a team at Heriot-Watt University and the University of Edinburgh has produced modified proteins that easily break down into micro-particles and therefore closely mimic the behaviour of fats during food manufacture. The proteins will enable [food manufacturers](#) to remove much of the fat used in their products without compromising on product quality.

Protein-for-fat substitution is not a completely new idea, but to date it has been restricted to products such as yogurts. In cheeses and cakes it has proved less successful in ensuring the authentic taste and texture vital to consumer satisfaction, mainly because proteins could not mimic the behaviour of fats closely enough.

By studying the proteins' chemical structure, the team has developed a detailed understanding of how they behave when they are heated or undergo other food manufacturing processes. This has provided the basis for modifying proteins so that they can be used as effective fat substitutes. The proteins could encourage development of a wider choice of low-fat foods, helping consumers to eat more healthily and reducing obesity in the UK and elsewhere.*

The team has achieved particularly promising results in using proteins to replace eggs, an ingredient commonly used as a gelling agent in bakery items. Such substitution not only cuts fat content; because eggs can be subject to significant price volatility, it could also cut the cost of products and so encourage consumers to eat more healthily.

The research will now be taken forward by project partner Nandi Proteins, who will use the findings to extend their range of proteins with a view to food manufacturers incorporating them in new low-fat products that could start reaching the shops within two years.

As part of a Technology Strategy Board-supported Knowledge Transfer Partnership, the research team is now also developing a computer model to help food manufacturers pinpoint the optimum level of [protein](#)-for-fat replacement for particular products.

Dr Steve Euston of Heriot-Watt University, who has led the project, says: "We've paved the way for the development of modified proteins that, by closely mimicking fat, can be used to produce a wider range of appealing low-fat foods. The result could be important health benefits, as well as a reduction in the burden on the NHS caused by obesity and other weight-related health problems."

Lydia Campbell, Chief Technology Officer for Nandi Proteins, says: "EPSRC funding allowed the scientific investigation of the underlying science of Nandi technology, and the outcomes will add significantly to the confidence with which the technology can be deployed across the UK and internationally. The outcomes of this research will also serve to broaden the innovation of our product range, and to compete with international companies."

More information: * 67per cent of men and 57 per cent of women in the UK are classified as overweight or obese; Global Burden of Disease

Study 2013, published in The Lancet on 29th May 2014,
[www.thelancet.com/journals/lan ... \(14\)60460-8/abstract](http://www.thelancet.com/journals/lan... (14)60460-8/abstract)

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