Reducing salt in crisps without affecting the taste

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Food scientists have found a way of measuring how we register the saltiness of crisps which could lead to new ways of producing healthier crisps — without losing any of the taste. The research by scientists at The University of Nottingham could lead to significant salt reduction in all snack foods.

The research, published on Thursday February 16 2012 in the Royal Society of Chemistry journal Food & Function, follows an investigation into how salt is released from crisps into the mouth.

Dr. Ian Fisk, a lecturer in the Division of Food Sciences, said: “The ‘salt burst’ from crisps is only released into the mouth 20 seconds after chewing begins. This means that in many cases the crisp may have already been swallowed before the majority of the salty taste is detected. Our aim is to develop a series of technologies that accelerate the delivery of salt to the tongue by moving the burst from 20 seconds to within the time that you normally chew and swallow. This would mean that less salt

would be needed to get the same amount of taste.

Excess salt in the diet has been linked to high blood pressure and cardiovascular disease. The World Health Organization's recommendation for daily salt intake is just five grams. Many of us have twice this amount. The reduction of salt intake is now a major challenge for health authorities and the food industry.

Why is salt in our food?

Salt isn't just a flavor enhancer. Historically it has been added to enhance shelf life, improve functionality and control fermentation. Common foods including bread, meat products, breakfast cereals, cheese and popular snacks are among major dietary contributors to our salt intake.

There is now a clear need for the food industry to find ways of preserving these attributes while maintaining the consumer experience.

Crisps tasted under strict supervision

Salt release is complicated and the panel of 10 tasters were chosen for their ability to eat repeatedly 'under instruction'.

Working with Xing Tian, a Masters Project student, Dr. Fisk brought together the consumer panel of food tasters to chew crisps a prescribed number of times and hold them in their mouths for 60 seconds. The crisps were then swallowed as normal.

By taking tongue swabs and analysing the results on equipment capable of detecting sodium content they were able to monitor the salt levels as they peaked and troughed. Unlike other studies Dr. Fisk's research truly identified the moments of maximum intensity and maximum value.

Salt in crisps sits both on the surface and is embedded in the surface oil. So the salt has to be physically separated from the crisp bolus (chewed material), solubilized in the saliva and then moved to the salt receptors in the tongue for the brain to register the taste before being swallowed.

Dr. Fisk said: “After 20 seconds we detected a peak in saliva salt concentration. The panellists confirmed that they too detected an increase in salt perception at around this time.”

More information: The full research paper can be found at: dx.doi.org/10.1039/c2fo10282j

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