

Influence of 'obesity gene' can be offset by healthy diet

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Children who carry a gene strongly associated with obesity could offset its effect by eating a low energy density diet, according to new research from UCL (University College London) and the University of Bristol published today in *PLoS ONE*.

The study, based on data from a sample of 2275 children from the Bristol-based ALSPAC study (Children of the 90s) provides evidence that people might be able to avoid becoming obese if they adopt a healthier diet with a low energy density - even those who carry the FTO gene, identified as being a high risk gene for obesity.

Dietary energy density (DED) refers to the amount of energy consumed per unit weight of food, or number of calories per bite. A low dietary energy density can be achieved by eating lots of water-rich foods like fruits and vegetables and limiting foods high in fat and sugar like chocolate and biscuits.

The researchers looked at how DED affected the build up of fat in the body over a period of three years in children aged between 10 and 13 years old. They found that children with a more energy dense diet (more calories per bite) tended to have more fat mass three years later and also confirmed that those carrying the high risk gene had greater fat mass overall.

When the researchers looked at whether children with the FTO gene had a stronger reaction to an energy dense diet than children with a lower genetic risk they found that they did not. These results indicate that if a child with a high genetic risk eats a diet with fewer calories per bite, they may be able to offset the effect of the gene on weight gain and so stay a healthy weight.

Lead author Dr Laura Johnson, UCL Epidemiology and Public Health, said: "This is an important finding because it provides evidence that it's easier to eat too much energy and gain weight when your diet is packed tight with calories, so adopting a diet

with more bulk and less energy per bite could help people avoid becoming obese regardless of their genetic risk. Obesity is not inevitable if your genes give you a higher risk because if you change the types of foods you eat this will help curb excessive weight gain."

"This shows that although our genetic make-up does have an influence on our health, it's certainly not the only defining factor. Those with high risk genes can, in some cases, resist their genetic lot if they alter their lifestyle in the right way - in this case, their diet."

FTO is the first common obesity gene to be identified in Caucasian populations. Previous studies have shown that adults with two copies of the FTO gene are on average 3kg heavier, and individuals with a single copy are on average 1.5kg heavier, than those without the gene.

More information: The paper "Dietary energy density affects fat mass in early adolescence and is not modified by FTO variants" is published online ahead of print in *PLoS One*.

Source: University College London

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