

Protein key to curbing overeating and preventing obesity

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(Medical Xpress) -- Including enough protein in our diets, rather than simply cutting calories, is the key to curbing appetites and preventing excessive consumption of fats and carbohydrates, a new study from the University of Sydney has found.

A multi-disciplinary team of researchers has shown that people on a 10 percent [protein](#) diet will eat more snacks between meals and consume significantly more calories in total compared with people on a 15 percent protein diet.

The results, published in the online journal [PLoS ONE](#), represent the first scientifically supported evidence that [dietary protein](#) plays an important role in appetite and total [food consumption](#) in humans, and are an important step in addressing the global [obesity epidemic](#).

"Humans have a particularly strong appetite for protein, and when the proportion of protein in the diet is low this appetite can drive [excess energy](#) intake," said lead author Dr Alison Gosby, who conducted the study with Professor Steve Simpson from the School of [Biological Sciences](#).

"Our findings have considerable implications for body weight management in the current nutritional environment, where foods rich in fat and carbohydrates are cheap, palatable, and available to an extent unprecedented in our history."

Protein is the driving force for appetite in many animals, according to Professor Steve Simpson, a world leader in nutrition. The 'protein-leverage' hypothesis, first proposed by Steve Simpson and co-author David Raubenheimer, proposes that animals have a fixed protein target, which they will defend at the expense of other nutrients.

"Our previous work on slime moulds, insects, fish, birds, rodents, mink, cats and monkeys has shown that animals have separate appetites for protein, fat and carbohydrate. Interestingly, if protein in the diet is diluted, even by a small amount by extra fat and carbohydrate, the appetite for protein dominates and they will keep eating in an attempt to attain their target level of protein," he says.

Although it has previously been suggested that protein content plays an important role in determining overall energy intake in humans, and is therefore linked to obesity, until now experimental verification has been lacking.

In their new study Dr Gosby and Professor Simpson wanted to test the 'protein-leverage' effect in humans. The researchers created three menus that represented low (10 percent), intermediate (15 percent) and high (25 percent) protein, based on data from the World Health Organization recommending people eat 15 percent protein diets. With the exception of protein, the three diets were identical in all other factors such as appearance, palatability, variety and availability.

The researchers then took a group of 22 lean people and fed each subject each of the three menus during three separate four-day periods, monitoring energy intake over each four-day period and hunger ratings on day four.

The researchers found subjects who ate a 10 percent protein diet consumed 12 percent more energy over four days than those eating a 15

percent protein diet. Moreover, 70 percent of the increased [energy intake](#) on the lower protein diet was attributed to snacking.

When the protein content was further increased to 25 percent, however, the researchers observed no change in behavior relative to the 15 percent [protein diet](#). On the fourth day of the trial, however, there was a greater increase in the hunger score between one to two hours after the 10 percent protein breakfast versus the 25 percent protein breakfast.

Dr Gosby commented: "This result confirms the 'protein-leverage' effect in humans and importantly, shows counting calories is not enough to manage appetite and body weight. In the western world, where food is abundant, if you reduce your calorie intake but fail to reach your protein target you will find it hard to resist hunger pangs."

Professor Simpson says today's western-world diets - where protein is increasingly diluted by fats and carbohydrates - are likely to be causing us to overeat and could be fueling the obesity epidemic.

"Our results indicate low protein diets will cause humans to overeat. Tragically in the modern westernised environment there are many factors encouraging us to eat foods that are high in sugars and fat, including reduced cost and increased availability of these foods. Underpinning all this is our ancestral environment in which fat and simple sugars were highly prized, leaving us with a predilection for these foods."

Provided by University of Sydney

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