

Setting the record straight on weight loss

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It's time to set the record straight. The only reliable way to lose weight is to eat less or exercise more. Preferably both.

So why bother to state the obvious? Because a body of scientific literature has arisen over recent years, suggesting that fat oxidation – burning the fats we eat as opposed to the carbohydrates – is enough to promote fat loss. It isn't.

Sydney scientists have demonstrated that mice genetically altered to burn fats in preference to carbohydrates, will convert the unburned carbohydrates into stored fat anyway, and their ultimate weight and body composition will be the same as normal mice.

It all comes down to an enzyme known as ACC2 (acetyl-CoA carboxylase), which controls whether cells burn fats or carbohydrates. When it was shown that 'blocking' ACC2 will force cells to burn fats in preference to carbohydrates, many assumed that such 'fat burning' could make fat stores evaporate, and make people thin without changing food intake or energy expenditure.

Associate Professor Greg Cooney, from Sydney's Garvan Institute of Medical Research, discusses misconceptions surrounding ACC2 in findings that appear in the prestigious international journal, *Cell Metabolism*, online today.

"Our data urges a correction in people's concept of a magic bullet - something that will miraculously make them thin while they sit on the couch watching television," said Professor Cooney.

"While none of the large pharmaceutical companies have marketed ACC2 inhibitors, there are many kinds of so-called 'fat-burning pills' available in the health food, body building and alternative medicine markets, where limited clinical effectiveness data are required."

"Many such products can also contain potentially harmful stimulants or come with a recommendation to follow a calorie-controlled diet and do more exercise while taking them. If you follow those recommendations, then of course you'll lose weight - but you'd lose it anyway."

"The energy you use in your home can come from a coal-fired power station, hydroelectric power, or a wind turbine. You won't know which because the end result is electricity."

“The energy that fuels your body can come from fats, proteins or carbohydrates. You won’t know which because the end result is ATP, or cellular energy.”

“Your body will use the energy it needs and store the leftover fats, proteins or carbohydrates as fat. When you do the sums, it’s ultimately a matter of calories in and calories out.”

“It’s important to stress that the focus of our study was limited to an analysis of the impact of fat oxidation on overall fatness. We didn’t investigate all impacts of fat oxidation – and so we don’t rule out benefits of burning off fats in specific tissues.”

“For example, manipulating fat metabolism may - or may not - lead to better insulin action in muscles or in the liver. Should insulin action be improved, that would obviously benefit obese people with Type 2 diabetes. But we can’t comment either way until we do the experiments.”

And the take-home message? Follow a healthy, balanced diet and get plenty of exercise.

ABOUT GARVAN

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with nearly 500 scientists, students and support staff. Garvan’s main research programs are: Cancer, Diabetes & Obesity, Immunology and Inflammation, Osteoporosis and Bone Biology, and Neuroscience. The Garvan’s mission is to make significant contributions to medical science that will change the directions of science and medicine and have major impacts on human health. The outcome of Garvan’s discoveries is the development of better methods of diagnosis, treatment, and ultimately, prevention of disease.

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