Scientists discover way to increase metabolism for weight loss

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Scientists from Melbourne's Howard Florey Institute have discovered a way to aid weight loss and reduce the likelihood of developing diabetes by manipulating fat cells to increase the body's metabolism.

As well as metabolising fat, fat cells help regulate blood pressure and blood volume through the renin-angiotensin system.

Dr Michael Mathai and colleagues investigated how blocking this system could cause weight loss. For this study, the scientists used mice that lacked angiotensin converting enzyme (ACE).

They found that ACE-deficient mice weighed 20% less and had 50-60% less body fat, particularly in the abdomen, compared to normal mice.

The ACE-deficient mice were no more active than normal mice and did not eat less, indicating their lower body fat resulted from a higher metabolism.

Subsequent experiments showed that the mice had a higher rate of resting energy metabolism at six months of age, which was linked to an increase of fat metabolism in the liver.

Remarkably, the mice gained less fat as they aged, indicating their higher metabolism was sustained throughout life.

The ACE-deficient mice also cleared glucose faster than normal mice,

suggesting a lower susceptibility to diabetes.

Dr Michael Mathai said his team's discovery confirmed the critical role that the renin-angiotensin system plays in fat metabolism.

"This is a significant discovery that shows by interfering with the renin-angiotensin system we can induce selective loss of fat mass," Dr Mathai said.

"ACE inhibitor and Angiotensin Receptor Blocker (ARB) drugs are already widely available to treat hypertension and have been found to have this same effect on fat and glucose metabolism, but many people using these drugs may not have noticed any significant weight loss because their lean body mass could have increased.

"It is possible that the ACE inhibitor and ARB drugs could be adapted to become specific weight loss drugs – it may be a question of the correct dosage.

"However, such a weight loss drug would need to be accompanied by a healthy diet and lifestyle to achieve and maintain weight loss, and to reduce the likelihood of developing diabetes," he said.

Dr Mathai said questions still remained concerning the full mechanism underlying the changes in body composition and metabolism when ACE was blocked.

"The next step in our research is to find out if the brain is responsible for increasing metabolism, or whether it is from a direct effect on the main body organs involved in fat metabolism," he said.

This research will be published tomorrow in the *Proceedings of the National Academy of Sciences.*

Source: Howard Florey Institute