



## Healthy weight link to longevity

Keeping a healthy weight may help people live longer by limiting brain exposure to insulin, say US scientists.

A study in mice found that reducing insulin signals inside brain cells increased lifespan.

Writing in *Science*, the researchers said a healthy lifestyle and weight reduce insulin levels in humans and may have the same effect.

Experts said, if proven, insulin would be just one of many factors, such as genes, that influence longevity.

Our findings put a mechanism behind what your mother told when you were growing up - eat a good diet and exercise and it will keep you healthy

Dr Morris White

Previous research in fruit flies and roundworms has suggested that reducing the activity of the hormone insulin, which regulates blood sugar levels, can increase lifespan.

The latest study looked at the effects of a protein, IRS2, which carries the insulin signal in the brain.

Mice who had half the amount of the protein lived 18% longer than normal mice.

Despite being overweight and having high levels of insulin, the mice were more active as they aged, and their glucose metabolism resembled that of younger mice.

The researchers said the engineered mice were living longer because the diseases that kill them, such as cancer and cardiovascular disease, were being postponed due to reduced insulin signalling in the brain, even though circulating levels of insulin were high.

They said, in the future, it may be possible to design drugs to reduce IRS2 activity to reproduce the same effect, although they would have to be specific to the brain.

### Weighty problem

Study leader Dr Morris White, an investigator at the Howard Hughes Medical Institute, said the simplest way to encourage longevity was to limit insulin levels by exercising and eating a healthy diet.

He said: "Our findings put a mechanism behind what your mother told when you were growing up - eat a good diet and exercise, and it will keep you healthy.

"Diet, exercise and lower weight keep your peripheral tissues sensitive to insulin.

"That reduces the amount and duration of insulin secretion needed to keep your glucose under control when you eat.

"Therefore, the brain is exposed to less insulin."

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Diabetes UK

His team is now planning to look at possible links between IRS2 signalling and dementia, which research has shown is associated with obesity and high insulin levels.

Matt Hunt, science information manager at Diabetes UK, said: "This is an interesting study as the work done on mice could suggest that insulin is playing a role in the ageing process.

"Nevertheless, we are looking at numerous and extremely complex gene interactions in the brain and this research doesn't yet explain how this mechanism might be working."

He said that human longevity had been steadily increasing, despite rising levels of obesity and diabetes suggesting that insulin levels in the brain would be only one of many factors involved.

"We welcome the fact that this study supports our key message of the importance of leading a healthy lifestyle."

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