
Weight loss without nausea ?



by Cliff Dominy PhD

Scientists at Stanford University have identified a novel peptide that can suppress appetite and facilitate weight loss, without apparent side effects. The peptide named BRP is just twelve amino acids long and is active in the hypothalamus, the appetite-control centre of the brain.

The team led by Dr Katrin Svensson, published their findings in *Nature* in March 2025. Using an AI-based program called the Peptide Predictor, they scanned the human genome looking at genes for peptide hormones linked to obesity in humans. The Peptide Predictor worked well, identifying 2600 potential candidates hidden deep within the genome of mice and humans.

A promising candidate

One candidate stood out from the rest - BRP, a twelve amino acid peptide cleaved from a parent protein by enzymes commonly used in regulating hormone production.

Svensson and colleagues observed that BRP dramatically reduced food intake in hungry mice for several hours after administration. This was similar in effect to those observed in the GLP-1 weight-loss drugs like Ozempic and Zepbound. An important difference was that, unlike the GLP-1 receptor agonists, BRP did not affect blood sugar or insulin levels.

The BRP amino acid sequence is widely conserved in mammals, and the investigators reported similar results



in mini-pigs- a species that has similar feeding habits to humans.

The obese mice were put on a diet. Animals treated with BRP were compared to mice on GLP-1 therapy. Over a two-week period, similar levels of weight loss were observed between the two groups - but with one important difference. **BRP mice lost almost exclusively fat mass**, whilst the GLP-1 group lost a percentage of lean muscle mass too.

Furthermore, animals fed BRP did not show taste aversion behaviour or evidence of nausea. The peptide was working differently in these mice compared to the GLP-1 group.

Brain scans revealed BRP was active in the hypothalamus of the mice. The activity was not seen in the nearby brainstem, which might explain the loss of appetite, but absence of nausea, in these animals.

Future research

There is a long way to go before BRP, or a similar peptide, can take on the likes of Ozempic in the weight-loss arena.

Research priorities include ...

- identifying and characterizing the BRP receptor in the hypothalamus.
- generating knockout mice to understand the mechanism of action of the hormone.

Should BRP prevail within the pharmacological pipeline, it would be a popular choice for people seeking to lose weight free of side effects.

Don't forget, BRP is just the first peptide identified by the Peptide Predictor algorithm - one wonders what the other 2599 might do? The Svensson group is going to be busy.

Reference

Coassolo L, B Danneskiold-Samsøe N, Nguyen Q, et al. Prohormone cleavage prediction uncovers a non-incretin anti-obesity peptide. Nature. 2025;641(8061):192-201.