Inhibiting the G-protein coupled receptor Gpr17 in hypothalamic neurons reduces food intake

Technology #cu12187

Obesity due to overeating is a major health problem. The current technology identifies a novel method for reducing food intake and controlling appetite. The technology does this by affecting a region of the brain critical for appetite regulation. A certain group of neurons in the hypothalamus classified by their expression of Agouti-related peptide (AgRP) are particularly critical for appetite regulation, and inhibiting AgRP or an associated membrane receptor, Gpr17, significantly reduces food intake in mice. This technology represents a novel therapy for obesity that targets a brain region responsible for the regulation of appetite.

Targeting Gpr17 to develop effective therapies for overeating-based obesity

Although several drugs attempt to reduce obesity by regulating appetite, none address the neural basis of overeating. Gpr17 regulates appetite and metabolism in the brain region that controls these processes, suggesting that inhibition of Gpr17 function will target the cause, rather than symptom, of obesity. Furthermore, highly specific antagonists to the Gpr17 receptor are already available, making Gpr17 a promising drug target. Gpr17 is also expressed in a more clearly defined set of neurons in the hypothalamus, as opposed to other candidates, which regulate a myriad of neural processes in multiple brain regions. This indicates that Gpr17 inhibition may more specifically combat obesity and limit side effects, making it ideal for a highly targeted obesity therapy.

This technology has been tested in mouse models and has been shown to significantly decrease appetite and food intake.

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Applications:

- Treat obesity in humans by reducing appetite and food intake
- Prevent obesity-related disorders such as cardiovascular disease
- Genetic mutations in Gpr17 may predict predisposition for obesity

Advantages:

- Targets the brain region that directly controls appetite
- Targets a clearly defined set of neurons with known metabolic functions
- Identifies a highly targetable G-protein coupled receptor
- High-affinity antagonists for Gpr17 are already available

Patent Information:

Patent Pending ([WO 2013113032 A1](#))

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Related Publications:


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