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## Importance of nesfatin-1 levels in the treatment of obesity

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Obesity and its associated co-morbidities have become a global health concern. Peptides such as leptin, cholecystokinin, glucagon-like peptide 1 and acylated ghrelin have been shown to influence energy balance in peripheral tissues and brain. It was suggested that nesfatin-1 could play a role in the control of food intake and energy expenditure. Leptin resistance is a common phenomenon in obesity. Central and peripheral injection of nesfatin-1 exerts its food reducing effects via a leptin dependent mechanism. Nesfatin-1 is a recently discovered peptide derived from the precursor protein nucleobindin2 (NUCB2) and described to be expressed in the rat hypothalamus. In quest of novel appetite regulating molecules, NEFA/nucleobindin2, a peroxisome proliferator- $\gamma$  receptor-activated gene was re-discovered in immortalized cell lines and later in the hypothalamus of rodents. Nesfatin-1 and its precursor NUCB2 possess anorexigenic properties. Nesfatin-1 reduces food intake following central injection in rats, mice or goldfish. Subsequent research showed a more widespread distribution of NUCB2/nesfatin-1 in the rat brain and a prominent expression in the rat stomach with 10-fold higher expression levels in the gastric oxyntic mucosa compared to the brain. A third ventricle injection of either NUCB2 or nesfatin-1 at similar doses reduces food intake in ad libitum fed rats during the dark phase. Moreover, the anorexigenic effect of nesfatin-1 is independent from leptin. Nesfatin-1's anorexigenic effect was confirmed in further studies where nesfatin-1 was injected centrally in ad libitum fed rats and fasted animals. Whether species differences play a role remains to be further investigated. In summary, current data clearly point towards a role of central nesfatin-1 in the regulation of food intake, whereas peripheral nesfatin-1 seems to be rather involved in the reduction of gastric motility in dogs, increase of hepatic oxidation and glucose homeostasis with an increase of glucose-stimulated insulin release from the pancreas in rats and humans.

### Biography

Gulay Ciftci is an expert in Molecular Biochemistry and Proteomics. She finished PhD at Ankara University, and now she works as an associate professor at Ondokuz Mayıs University, Samsun, Turkey. Her work focuses on hormones, proteins and genes.

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