

What is the link between GLP-1 and appetite regulation?

Homeostatic responses to weight regulation include changes to behavioural and psychological systems that control energy expenditure and appetite. As part of these responses, the human body secretes several hormones that regulate appetite.¹

When food is consumed, **hormones such as ghrelin and leptin**, and additional hormones such as **GLP-1** are released into the bloodstream and may affect several areas of the brain, influencing feelings of **satiety and hunger**.¹⁻⁵

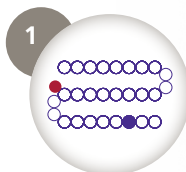
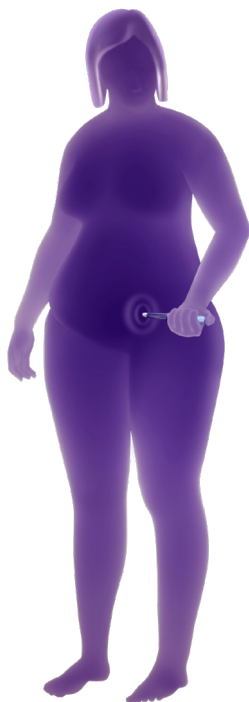
Possible effects of these appetite hormones?^{1,5-7}

Hormone Production Site	Hormone	Effect on Appetite
 Stomach	Ghrelin	↑
 Adipose (fat) tissue	Leptin	↓
 Gastrointestinal tract	GLP-1	↓

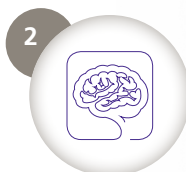
GLP-1, glucagon-like peptide-1.

Taking a closer look at how Saxenda® works

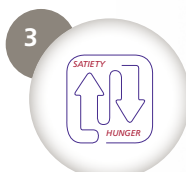
Saxenda® is an analog of human GLP-1 and acts as a GLP-1 receptor agonist



Saxenda® (liraglutide 3 mg) is **97%** similar to natural GLP-1.²



Saxenda® binds to and activates GLP-1 receptors in the brain involved in appetite regulation.^{2,*}



Saxenda® is considered to increase feelings of satiety and fullness, and decreases hunger.²



The weight loss effect of Saxenda® is considered to be mediated by decreased appetite and food intake.^{2†}

* Clinical significance has not been established.

† Data from a 5-week pharmacodynamic trial of 49 obese (BMI 30–40 kg/m²) non-diabetic patients. Appetite sensations were assessed before and up to five hours after a standardized breakfast meal, and *ad libitum* food intake during the subsequent lunch meal.

Saxenda® (liraglutide) is indicated as an adjunct to a reduced calorie diet and increased physical activity for chronic weight management in adult patients with an initial body mass index (BMI) of:²

- 30 kg/m² or greater (obese), or
- 27 kg/m² or greater (overweight) in the presence of at least one weight-related comorbidity (e.g., hypertension, type 2 diabetes, or dyslipidemia) and who have failed a previous weight management intervention.

Consult the product monograph at http://www.novonordisk.ca/content/dam/Canada/AFFILIATE/www-novonordisk-ca/OurProducts/PDF/Saxenda_PM_English.pdf for more information on:

- Contraindications in patients with personal or family history of medullary thyroid carcinoma (MTC), Multiple Endocrine Neoplasia syndrome type 2 (MEN 2), pregnant and breast-feeding women
- The most serious warning and precaution regarding the risk of thyroid C-cell tumours
- Relevant warnings and precautions regarding combination use with other weight loss products, administration considerations; risk of

increased heart rate and PR interval prolongation; use in patients with type 2 diabetes mellitus; risk of acute pancreatitis or gallbladder disease; risk of hypersensitivity and angioedema; risk of breast neoplasms; use in patients with suicidal behaviour and ideation; use in patients with recent myocardial infarction, unstable angina and congestive heart failure; use in patients with hepatic or renal insufficiency, inflammatory bowel disease or diabetic gastroparesis

- Conditions of clinical use, adverse reactions, drug interactions and dosing instructions

The Product Monograph is also available by calling Novo Nordisk at 1-800-465-4334.

References:

1. Torekov SS, et al. Obesity—an indication for GLP-1 treatment? Obesity pathophysiology and GLP-1 treatment potential. *Obes Rev.* 2011;12(8):593-601. 2. Saxenda Product Monograph. Novo Nordisk Canada Inc. July 12, 2017. 3. Suzuki K, et al. Obesity and appetite control. *Exp Diabetes Res.* 2012;2012:824305. 4. Stangor C, et al. *Introduction to Psychology – 1st Canadian Edition*: B.C. Open Textbook, 2014. 5. Gonzalez-Muniesa P, et al. Obesity. *Nat Rev Dis Primers.* 2017;3:17034. 6. Cho YM, et al. Glucagon-like peptide-1: glucose homeostasis and beyond. *Annu Rev Physiol.* 2014;76:535-559. 7. Drucker DJ. The biology of incretin hormones. *Cell Metab.* 2006;3(3):153-165.



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Pr **Saxenda**®
 liraglutide