Science Note 1: How Do GLP-1 Medications Work?

The Bottom Line: GLP-1 medications are often described as weight-loss drugs, but that description is incomplete. They influence multiple biological systems involved in blood sugar regulation, appetite, satiety and cardiovascular health. Understanding these broader metabolic effects helps explain both their therapeutic potential and why the conversation around them is often more complex than weight loss alone.

Blood Sugar Regulation

GLP-1 medications inhibit glucagon secretion from the pancreas.[4,1]

Glucagon is a hormone that signals the liver to release stored glucose into the bloodstream. By reducing glucagon secretion, GLP-1 medications help prevent excessive increases in blood glucose levels, reducing the demand for insulin secretion.[2]

GLP-1 medications also improve the effectiveness of insulin, further contributing to blood glucose regulation.[1,3,6]

Gastric Emptying

GLP-1 medications delay gastric emptying, meaning food leaves the stomach more slowly.[1,2,3,4,5,6,7] This contributes to prolonged feelings of fullness. Because food may remain in the stomach for longer, some surgical and anaesthetic guidelines recommend temporarily discontinuing GLP-1 therapy before surgery to reduce the risk of aspiration during anaesthesia.[8]

Appetite and Satiety

GLP-1 medications act on the appetite-regulation centres in the brain, reducing hunger and increasing satiety. [1,2,5,6,7]

Satiety encompasses both physical fullness and a sense of satisfaction after eating.[6] Many patients report reduced food preoccupation and decreased hunger while using these medications.[7]

The combined effects of delayed gastric emptying and increased satiety contribute significantly to reduced food intake, whilst enhancing weight loss.[1,3,4,6]

Cardiovascular Effects

Several GLP-1 receptor agonists have also demonstrated cardiovascular benefits, including reductions in blood pressure, improvements in cholesterol profiles and lower rates of major cardiovascular events in high-risk populations.[3,6]

Emerging Areas of Research

Researchers are also investigating whether some of the metabolic benefits of GLP-1 medications may involve interactions with the gut microbiome.[6]

The diverse actions of GLP-1 medications help explain why they are used for far more than weight management. Their effects on glucose regulation, appetite, satiety and cardiovascular health have led to their use across a growing range of metabolic conditions, while also raising new scientific questions that researchers continue to investigate.

References

1. Bayat, Z., Daya, R., & Mahyoodeen, N. G. (2021). Cardiovascular outcome trials of GLP-1 receptor agonists and SGLT2 inhibitors. *South African General Practitioner, 2*(3), 100–104. https://doi.org/10.36303/SAGP.2021.2.3.0073
2. Bikman, B. (2025, February 28). *92: Natural ways to boost GLP-1 with Dr. Ben Bikman* [Video]. YouTube. https://www.youtube.com/watch?v=vdqHQMrJBlw
3. Drucker, D. J. (2018). Mechanisms of action and therapeutic application of glucagon-like peptide-1. *Cell Metabolism, 27*(4), 740–756. https://doi.org/10.1016/j.cmet.2018.03.001

4. Drucker, D. J. (2022). GLP-1 physiology informs the pharmacotherapy of obesity. *Molecular Metabolism, 57*, Article 101351. https://doi.org/10.1016/j.molmet.2021.101351
5. Drucker, D. J. (2024). The GLP-1 journey: From discovery science to therapeutic impact. *Journal of Clinical Investigation, 134*(2), e175634. https://doi.org/10.1172/JCI175634
6. Green, A. (2023, May 3). *In-depth: SA's obesity problem and the promise of new weight loss medicines*. Spotlight. https://www.spotlightnsp.co.za/2023/05/03/in-depth-sas-obesity-problem-and-the-promise-of-new-weight-loss-medicines/
7. Kushner, R. F. (2023, May 1). *A promising obesity drug with Robert Kushner, MD* [Audio podcast episode]. In *Breakthroughs Podcast*. Northwestern University Feinberg School of Medicine. https://www.feinberg.northwestern.edu/research/podcast/a-promising-obesity-drug-with-robert-kushner-md.html
8. Rivelland J. Personal communication. June 16, 2026.