# PEPTAMEN® Family of Formulas

*Designed for Absorption & Tolerance*

# Whey protein has an **insulinotropic effect**

Poor blood sugar control is associated with increased incidence of: acute kidney injury, acute myocardial infarction, and mortality. Increased use of insulin is associated with increased morbidity/mortality.[1-3]

## Whey peptides have a **positive effect** on the glycemic response and insulin sensitivity.

- Whey hydrolysates result in release of incretin hormones
  - Gastric Inhibitory Peptide (GIP)
  - Glucagon Like Peptide-1 (GLP-1)
- GLP-1 and GIP have strong insulinotropic effects
- Whey hydrolysates result in greater GIP and GLP-1 release than intact whey protein
- GLP-1 inhibits the secretion of glucagon; glucagon signals the body to convert stored energy (glycogen) to glucose
- Whey peptides inhibit Dipeptidyl Peptidase IV (DPP-IV). DPP-IV degrades GIP and GLP-1


Ask your Nestlé Sales Representative for further information on the relationship between whey and glucose management.



**1.** van Vught, et al. *Crit Care Med* 2016;44:1338-46. **2.** Kar, et al. *World J Diabetes* 2015;Jun10;6(5):693-706.
**3.** Finfer, et al. *N Engl J Med* 2009;360:1283-1297

Nestlé HealthScience

# Insulinotropic Effects of Whey: Mechanisms of Action, Recent Clinical Trials, and Clinical Applications

*Adams, RL and Broughton KS Annals of Nutrition and Metabolism 2016;69:56-63*

## Purpose:

Review the plausible mechanisms that promote the insulinotropic effects of whey and examine how this can help promote glycemic control in patients with chronic and acute hyperglycemia.

## Composition of Whey:

Whey protein is found in the liquid portion of milk and is commercially available as whey protein concentrate, whey protein isolate, reduced lactose whey, partially and extensively hydrolyzed whey and demineralized whey protein. Whey is a high-quality, complete protein that contains all of the essential amino acids.

**When compared to casein or casein/whey blends, whey, as a blend of whey protein concentrate, partially hydrolyzed whey and whey protein isolate, has a significantly higher protein efficiency ratio, net protein ratio and true digestibility.**

The degree and type of hydrolysis of whey protein impacts its efficacy. Whey protein has bioactive peptides and amino acids that are released during hydrolysis. It is also rich in the branched chain amino acids (BCAAs) isoleucine, leucine and valine (BCAAs stimulate rapid insulin secretion), which together with its bioactive peptides, may be the source of altered blood glucose response in humans.

## Mechanism of Action:

Several studies have shown that consuming whey protein prior to or with a meal decreased postprandial or post-meal blood glucose and improved insulin response. This improved insulin response may be attributed to a more rapid digestion of the fast-acting protein, whey, as compared to the slower-acting protein, casein.

**Whey empties the stomach rapidly, does not coagulate and is metabolized faster than other proteins, causing a rapid rise in serum amino acids. The elevating amino acids stimulate insulin secretion.**

Incretin hormones, glucagon-like polypeptide-1 (GLP-1) and gastric inhibitory peptide (GIP) have strong insulinotropic effects. Amino acids and peptides from whey may increase the release of both GLP-1 and GIP, in turn, causing an increase insulin secretion and promoting gastric emptying and appetite regulation. Dipeptidyl Peptidase-IV is an endogenous protein that quickly breaks down GIP and GLP-1, contributing to higher blood glucose levels. Hydrolyzed whey peptides inhibit DPP-IV activity, which may help improve blood glucose control.

**Consuming whey protein hydrolysates significantly increases insulin secretion as compared to intact whey, thus improving blood glucose response in both healthy people and those with Type 2 diabetes mellitus. This is considered a nutraceutical benefit by some researchers.**

## Conclusions:

Whey protein promotes improved glycemic response in patients with chronic and acute hyperglycemia. Significant potential exists for the use of whey protein as a preventative measure in people at risk of developing Type 2 diabetes mellitus.



The full article may be accessed at
http://www.karger.com/Article/Pdf/448665

Nestlé Nutrition Institute
Science for Better Nutrition