Mercodia

A Gut Feeling for hormones

Immunoassays for the gut hormones GLP-1, GIP and glicentin

Mercodia assays
for gut hormones

Gastrointestinal peptides such as GLP-1, GIP, and glicentin play important roles in many metabolic diseases as agonists or antagonists. These biomarkers are often used and explored as treatment options for diabetes and obesity. They also play a crucial role when subjecting the patients to other treatments such as bariatric surgery.

GLP-1

An incretin hormone mainly processed from proglucagon in the intestinal L-cells. The biologically active forms are GLP-1 (7-36) amide and GLP-1 (7-37). These forms have a short half-life of only a couple of minutes, due to their rapid degradation by the enzyme DPP4. The enzymatic processing, catalyzed by DPP4, results in the forms: GLP-1 (9-36) amide and GLP-1 (9-37)[1].

GIP

GIP was the first incretin to be identified and is derived by proteolytic processing of a 153-residue precursor, preproGIP, expressed in intestinal K cells. GIP 1-42 (active GIP) is rapidly cleaved in circulation at the N-terminus by DPP-4 to yield GIP 3-42, regarded as a non-active form of GIP[1].

Glicentin

A proglucagon-derived peptide mainly produced in the L-intestinal cells, after stimulation by food intake. The glicentin peptide contains the entire sequence of glucagon, GRPP, and oxyntomodulin.

Total vs active

Active GIP/GLP-1 is rapidly cleaved in circulation at the N-terminus by DPP-4. Because of this quick proteolytic degradation, not only intact but also total (i.e intact plus DPP-4-metabolized) forms of GIP/GLP-1 must be measured to study its secretion and processing in vivo.

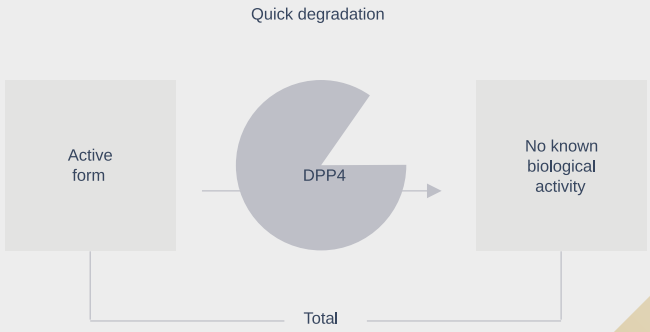

Figure 1. DPP4-mediated degradation of GIP/GLP-1.

Why the amidated forms of GLP-1?

Since the predominating form of GLP-1 in humans is (9-36) amide, it is very important that this isoform is measured at 100%[2]. If the method used has a low cross-reactivity to the predominating metabolite, the results will be underestimated and there is a risk that fluctuations and changes in plasma concentrations will not be accurately detected (see figure 2).

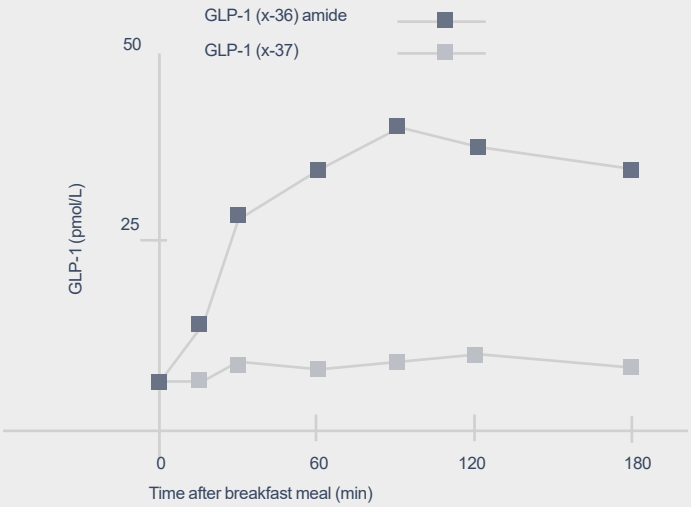

Figure 2. GLP-1 response to a breakfast meal -(n = 6) as measured with an antibody specific for amidated GLP-1, (x-36), and an antibody specific for glycine-extended GLP-1, (x-37). GLP-1 immunoreactivity in plasma in pmol/L is plotted against time (min). Picture modified from Ørskov et al., Diabetes 1994.

Product	Your challenges	Mercodia solutions
GLP-1/GIP	Detection	Assays that detect total GLP-1/GIP
GLP-1/GIP/Glicentin	Expression levels	Broad measuring range with chemiluminescence detection
GLP-1	Specificity	Excellent detection of the most abundant isoforms
GIP	Specificity	Product claims confirmed by liquid chromatography
Glicentin	Specificity	No cross-reactivity to circulating proglucagon derived gut peptides

References:
1. Seino et al., Journal of Diabetes Investigation, 2010
2. Ørskov, et al., J Biol Chem 1989
3. Ørskov et al., Diabetes 1994

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Catalog no.	Product name	Sample volume	Range
10-1278-01	Total GLP-1 NL-ELISA	25 µL	0.9-940 pmol/L
10-1258-01	Total GIP NL-ELISA	25 µL	2.7-1000 pmol/L
10-1273-01	Glicentin ELISA	25 µL	3-300 mU/L

Northern Lights

Mercodia Northern Lights® (NL) is a product line that employs chemiluminescence as the method for detection. This sensitive detection makes it possible to push the measuring range to very low concentrations while still being able to detect high levels.

For more information about all our products visit **mercodia.com/products**

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