



# METABOLISM

GHRELIN

- 01 Unique set of assays
- 02 Whatever blood collection
- 03 Recognised technology



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## GHRELIN

### AN EXCITING SCIENTIFIC STORY...

Obesity and diabetes are amongst the greatest public health issues for this century. Indeed, over the last 30 years, obesity has more than doubled, achieving 1.5 billion persons. It does affect without any distinction all the population (children, adult, elderly people) and all socioeconomic status. Obesity is a complex condition which poses a major risk for serious diet-related, non-communicable diseases, including type 2 diabetes.

Ghrelin is fast becoming an endocrinology target of the millennium. It has been discovered in 1999 almost concomitantly by two teams using different approaches:

- > The first one in Japan (Kojima & Kangawa) has been using a reverse pharmacological approach and submitted a patent on their discovery. This was the first time a peptidic hormone was shown being acylated to become active.
- > The second one in France (Tomasetto et al) has been using molecular biology technique and published their discovery of the Ghrelin (Motilin like peptide) one day after Kojima's team submitted his patent anteriority.

From the discovery of both teams, we learn that this peptide would potentially be a good candidate in Growth but also as a gut peptidic hormone with important role in appetite, food intake and glucose homeostasis (diabetes/obesity).

Very quickly after Kojima's publication, scientists became interested in measuring the circulating concentration of the hormone in biological samples (blood/plasma). Assays were quite rapidly set-up but often without caring about the reliability of Acylated Ghrelin and mixing content of both forms (Acylated and Unacylated Ghrelin).

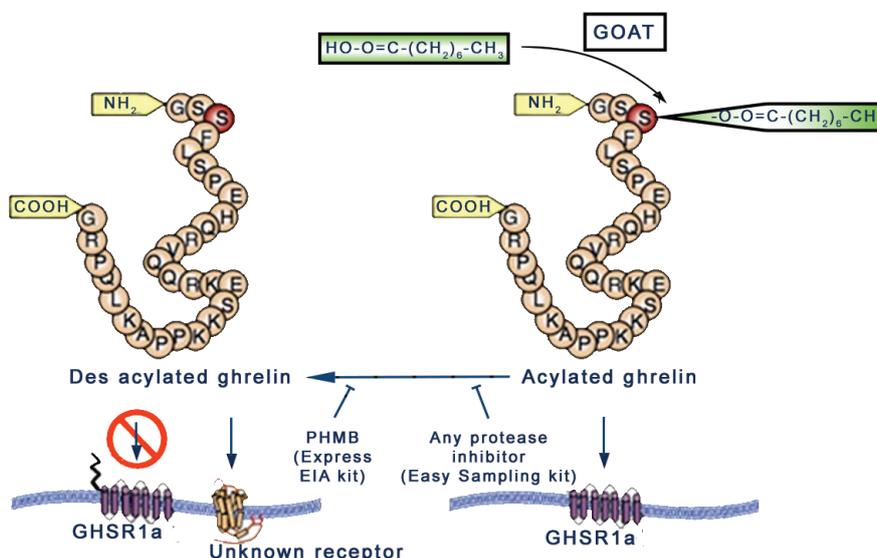
Assays put early on the market were either non-specific (measuring Acylated and Unacylated forms) or leading to falsely low value due to Ghrelin deacylation/degradation. Despite those biased results, it has been well established the existence of a Ghrelin pulse (pic before meals, and rapid decrease postprandial). However a number of inconsistencies remain between the different results obtained in clinical studies due to lack of tools to measure Ghrelin acylated.

This led many scientists to discredit Ghrelin as a reliable biomarker. However, for those still interested, the challenge of collecting properly the sample was still an issue.

The first assay taking into account the fact of assaying the two Ghrelin forms only appeared later on onto the market (five years later) and was developed and produced by Bertin Pharma under the SPI-Bio brand name.

While Acylated Ghrelin is known as the active form of the peptide, and as the only form for which a receptor has been identified, clinical trials have shown positive results using the Unacylated form. It is not yet known how this works and several teams in the world are currently trying to sort out that question.

In 2014, Bertin Pharma launches, under the brand name SPI-Bio, a new set of assays called Ghrelin Easy Sampling EIA kits that meets the problematic to measure Ghrelin whatever collection procedure.



## ...AND CLINICAL CHALLENGES

Ghrelin is now a well-known orexigenic hormone, the signal that tells people to go to eat. It became an obvious target for treatment of eating disorders like obesity or anorexia nervosa.

However, we know that Ghrelin is also implicated in many other physiological systems like the cardiovascular, bone, gastrointestinal and immune systems as well as some physio-pathological states like mood or muscle mass maintenance, heart failure, myocardial infarction, cachexia, cancer, Prader Willi syndrome ...

Specific bioanalysis tools such as the SPI-Bio Ghrelin EIA assay kits are now being available, it will be easier and easier to elucidate the role of that new hormone and its therapeutic implications.

## BERTIN PHARMA KNOW-HOW

Bertin Pharma's expertise is to develop analytical tools for biomarkers. As such, in **2004**, Bertin Pharma launched **its first Ghrelin Biomarker assay kits**, under the **SPI-Bio** brand name, as a result of its state-of-the-art R&D research teams.

Bertin Pharma was **the first company providing bioanalytical tools to assay Acylated and Non-acylated Ghrelin with very high sensitivity.**

Today, in addition to their existing **Ghrelin Express EIA kits**, Bertin Pharma offers **a totally new set of assays** that will allow any scientist to measure **Acylated & Unacylated** Ghrelin whatever their collection procedure.

Those assays are called **Easy Sampling** because any blood sample collected can be used on any kind of protease inhibitors with or without acidification. While there is not yet a consensus on the collection procedure, we are quite confident that the scientific community will work toward this, especially if the biomarker is involved in clinical trials or later on in clinic. It is today largely accepted that a study involving Ghrelin should include both Acylated and Unacylated forms, while total Ghrelin is almost irrelevant.

Bertin Pharma has a solution, from early discovery programs using our 384-well plate format to select your GOAT inhibitor, to pre-clinical or clinical stages.

### OVERVIEW

- > +100 assays available in various therapeutic areas.
- > Specific expertise in:
  - **Fit-to-purpose** development assay
  - Analytical platforms: Immunoassays methods, Hyphenated methods
  - Biomarker Assay **Translation from discovery to clinical studies**
  - Capabilities to provide **ready-to-use & customized assay kit** for in-house or central labs implementation
- > Over 20 years experience
- > Industrialisation of assays for Pharmaceutical, Cosmetic & nutraceutic R&D

## BERTIN PHARMA KNOW-HOW

Bertin Pharma uses in most of its EIA kit Acetylcholinesterase (AChE<sup>®</sup>) technology. Acetylcholinesterase, the enzymatic label for EIA, has the fastest turnover rate of any enzymatic label. The use of AChE<sup>®</sup> as enzymatic label for EIA has been patented by the CEA (French Alternative Energies & Atomic Energy Commission) and Bertin Pharma, formerly known as SPI-Bio who has a long track record expertise to develop and produce EIA kits using this technology.

AChE<sup>®</sup> offers several advantages compared to enzymes conventionally used in EIAs:

- > Kinetic superiority and high sensitivity
- > Low background
- > Wide dynamic range
- > Versatility



## OUR BIOANALYTICAL ANALYSIS SERVICES

Bertin Pharma offers full and integrated package of products and studies strongly dedicated to analysis in biological matrices of endogenous or exogenous compounds from biochemicals, peptides, proteins and biologics.

Bertin Pharma can run your own samples to assay Acylated or UnAcylated Ghrelin. We have a long track record in developing, validating analytical methods in EIA, physicochemical, etc.

## LIST OF GHRELIN EIA KITS

		<b>Application</b>
> Acylated Ghrelin (human) Express	<b>Cat No: A05106</b>	> PHMB, PMSF, Aprotinin samples
> Acylated Ghrelin (human) 384 wells	<b>Cat No: A05106</b>	> GOAT inhibitor screening
> Acylated Ghrelin (mouse, rat) Express	<b>Cat No: A05117</b>	> PHMB, PMSF, Aprotinin samples
> Unacylated Ghrelin (mouse, rat) Express	<b>Cat No: A05118</b>	> PHMB, PMSF, Aprotinin samples
> Unacylated Ghrelin (human) Express	<b>Cat No: A05119</b>	> PHMB, PMSF, Aprotinin samples
> Acylated Ghrelin (human) Easy sampling	<b>Cat No: A05306</b>	> Any kind of samples
> Acylated Ghrelin (mouse, rat) Easy sampling	<b>Cat No: A05317</b>	> Any kind of samples
> Unacylated Ghrelin (mouse, rat) Easy Sampling	<b>Cat No: A05318</b>	> Any kind of samples
> Unacylated Ghrelin (human) Easy Sampling	<b>Cat No: A05319</b>	> Any kind of samples
> Unacylated Ghrelin (dog) Easy sampling	<b>Cat No: A05320</b>	> Any kind of samples
> Acylated Ghrelin (dog) Easy sampling	<b>Cat No: A05321</b>	> Any kind of samples
> Acylated Ghrelin (pig)	<b>Cat No: A05401</b>	> PHMB, PMSF, Aprotinin samples
> Unacylated Ghrelin (pig)	<b>Cat No: A05402</b>	> PHMB, PMSF, Aprotinin samples
> Sampling Tubes with PHMB	<b>Cat No: D31009</b>	> Sample preparation