

New incretin-based medicines will allow weight and diabetes control with a single weekly dose

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The new generation of incretin-based medicines will allow a coordinated action against the combination diabetes/obesity, also known as diabetes, in some cases with only a single weekly dose, and with the likelihood of additional beneficial effects on other health complications related to this condition, such as cardiovascular and neurodegenerative diseases.

The experts in diabetes who met in Vigo at the third BIOCAPS workshop all highlighted the highly promising therapeutic pathways currently being opened up as regards a pharmacological approach to this combination of the two worst epidemics of the 21st century in developed countries. The increasing incidence of this disease has driven recent research efforts, and the exchange of ideas and opinions concerning the latest breakthroughs, which is a key objective of the Biomedical Research Institute (IBI) when organising its most prestigious annual scientific meeting, is considered to be essential.

During the opening of the workshop, the chairwoman of the Fundación Biomédica Galicia Sur, Beatriz Gil de Araújo, highlighted that "the BIOCAPS project has placed the IBI, which now hosts more than 500 scientists, as a centre of reference in the field of [biomedical research](#)".

The coordinator of BIOCAPS, África González, asserted that the programme "is an excellent opportunity to open the IBI up to society, the biomedical community and also to industry" and reiterated her

confidence in the continuity of this line once the project concludes. The incorporation of scientific talent, the establishment of new collaborations, the acquisition of infrastructures, the greater visibility of the institute and the boost to its innovation activities highlight compliance with the targets set at the launch of BIOCAPS, as explained by its coordinator.

Alternatives to insulin

During the opening lecture, Flavia Mulè, from the University of Palermo (Italy), discussed the possible uses of glucagon-like peptide 2 (GLP-2), one of the main types of incretin, as an alternative to insulin for the treatment of diabetes. After noting that its role in the control of glycaemia ([blood sugar levels](#)) has been studied to date in animal models, Dr. Mulè reiterated her conviction that "this strategy deserves far greater attention for the treatment of obesity-related type 2 diabetes and future research should focus on determining its efficacy in humans".

According to Mulè, the main advantage of this option is that it improves sensitivity to insulin (ability to correctly metabolise glucose) and, therefore, the control of blood sugar levels in conditions of obesity. "In addition, its action is related to anti-inflammatory effects, thus meaning that it could be beneficial for associated disorders, such as high blood fat levels (hyperlipidaemia), fatty liver and hypertension", she added.

New generation of medicines

Physical inactivity and poor eating habits increase the risk of suffering from type 2 diabetes. This occurs because an increase in weight, and therefore in adipose tissue, produces insulin resistance, thus meaning that this hormone is unable to perform its role in the different tissues of the body correctly. This results in hyperglycaemia and the onset of

diabetes.

The [new generation](#) of medicines aims to provide a more effective and broader spectrum action. The views of Flavia Mulè were complemented on the closing day of the workshop by Javier Salvador, from the University of Navarra, who discussed the major breakthrough that two families of medicines associated with incretins represent for the treatment of diabetes. "When faced with the onset of these conditions we previously had not medicines that allowed glucose levels to be controlled without a risk of hypoglycaemia (low sugar levels) while also promoting weight loss or preventing it from increasing", he explained. "Sulfonylureas, glitazones and insulin are medicines with a known ability to control [glucose levels](#) but which also tend to result in weight gain and can provoke hypoglycaemia".

Salvador noted that new compounds such as dulaglutide, which, in addition to having a satiating effect and eliminating the risk of hypoglycaemia, will be administered as a single weekly injection, will shortly become available. Although some types of incretin-based medicines are already being used to treat type 2 diabetes, the researcher from the University of Navarra considers that "an awareness of the role of obesity in the onset and deterioration of control in diabetes, and the availability of formulations with a more prolonged action, will help to increase their use".

As is the case for some of the compounds mentioned by Flavia Mulè, these also present potential cardioprotective, antiarteriosclerotic and anti-inflammatory effects and may also protect against [neurodegenerative diseases](#).

Experts from nine countries

As noted by the workshop's organiser, Federico Mallo, during his

institutional inauguration, the scientific meeting "has the honour of including presentations by experts from nine European countries: Germany, the UK, Sweden, France, Italy, Portugal, Ireland, Austria and Spain". In addition, he hoped that the workshop will serve to "plant the seeds of future collaborations".

The themed session commenced with a round of presentation on the physiopathology of adipose tissue, in other words the disorders that arise in fatty tissue. The next day was dedicated to diabetes-related complications, which range from Parkinson's disease to arteriosclerosis, ophthalmological diseases and other conditions. The session closed with a plenary speech by Donal O'Shea, from the University of Dublin (Ireland), who reviewed recent progress in incretin therapy for treating obesity and inflammation.

Finally, the third day was dedicated to the most innovative approaches and the greatest challenges in the treatment of diabetes. The closing lecture was given by Timo Muller, from the IDO in Munich, who presented the new generation of incretin complexes for specific therapies to the audience. His group, in collaboration with industry, has made significant breakthroughs in the design and evaluation of new medicines for diabetes. "We have experience in creating molecules that are able to activate mechanisms which benefit metabolism, correcting problems such as obesity and [insulin resistance](#)", he explained.

Some of these medicines are already in the clinical evaluation phase and others will shortly be tested in trials, although it is difficult to know if and when their use will become widespread. However, whenever this occurs, Müller expects them to have a promising future as their characteristics confer highly advantageous possibilities on them with respect to currently available formulations. "We can transport the medicine directly to target cells while keeping it away from other tissues, thus minimising undesired side-effects", he explained.

Provided by Universidade de Vigo

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