EPIGENETIC BIOMARKERS FOR THE DIAGNOSIS AND PREVENTION OF THE EVOLUTION OF OBESITY

A research group from the Biomedical Research Institute of Málaga (IBIMA), Andalusian Public Health System (SAS), University of Málaga and Consorcio Centro de Investigación Biomédica en Red (CIBER) has developed a new methodology useful in the diagnosis and prevention of the evolution of obesity.

The Problem

Currently, obesity has reached epidemic proportions worldwide, as around 2.8 million people die as a result of obesity and overweight. According to data compiled by the World Health Organization (WHO), it has been determined that the rate of obesity has almost tripled in the last 40 years.

Obesity is associated with an increased risk of developing metabolic syndrome, type 2 diabetes, and cardiovascular disease. However, all people who suffer from obesity do not present the typical pattern of metabolic complications, which has been called Metabolically Healthy Obesity (MHO), with a prevalence between 10 and 35% depending on the criteria and the population studied. The MHO phenotype can progress towards Metabolically Unhealthy Obesity (MUO), although there is evidence to suggest that a relevant percentage of individuals maintain a healthy state over time.

The Solution

The factors that determine the stability of the MHO phenotype are being studied. Among those that have been considered to be beneficial are: greater insulin sensitivity, a specific distribution of fat, less infiltration of immune cells in adipose tissue or a metabolically beneficial pattern of secretion of cytokines and adipokines.

Although there is a percentage of predisposition to obesity that has a genetic component, it is known to be low, so other factors are being analyzed, such as epigenetic modifications. For this reason, the researchers have compared methylation patterns of MHO patients who have remained MHO over time, versus MHO patients who have evolved to the MUO phenotype, and have determined epigenetic biomarkers that can predict the progression from metabolically healthy obese subjects to patients metabolically ill obese and have the potential to prevent metabolic deterioration in patients with MHO.

Innovative Aspects

- It allows patients to access the appropriate treatment for the pathology, so that the evolution of the disease is as positive as possible, allowing control of diabetes for decades.
- It is a diagnostic methodology of simple use and interpretation that allows the development of a commercial kit.
- It would mean a reduction in the costs associated with the current diagnosis of this type of diabetes made through genetic tests.

Intellectual Property:
Spanish national patent application (September 2021).
Suitable for international extensión (PCT application).

Aim

Looking for a partner interested in a license and/or a collaboration agreement to develop and exploit this asset.

Contact

Consorcio Centro de Investigación Biomédica en Red *(CIBER)*

otc@ciberisciii.es
https://www.ciberisciii.es