



The role of the brain in the development of obesity

Obesity levels have reached epidemic proportions worldwide. According to the World Health Organization, 39% of adults were overweight and 13% were obese in 2014. In Chile, obesity rose to 27.8% last year, which is the highest in South America according to the Global Health Watch report.

“Obesity is currently one of the biggest public health problems facing Chile and the world,” states Dr. Claudio Pérez Leighton, Assistant Professor for the Faculty of Medicine and investigator for the Center for Integrative Medicine and Innovative Science (CIMIS) at the Universidad Andrés Bello. The brain, explains Dr. Pérez Leighton, plays a fundamental role in the control of food intake, physical activity, and energy expenditure. Therefore, alterations in the regulatory mechanisms of these conducts are key in the development of obesity.

Dr. Pérez is currently leading the project entitled “The role of the neuropeptides orexin and dynorphin in eating and physical activity and their relationship with obesity,” which is funded through Conicyt and Fondecyt. This investigation is focused on understanding the role of a group of neurons located in the hypothalamus, termed orexin neurons, and the interactions of multiple orexin-liberated neuropeptides, which are small molecules that modulate neuron activity in the brain.

The causes of obesity are complex, and the effectiveness of available treatments is low. Considering the key roles that orexin and dynorphin play in the functioning and development of the brain, Dr. Pérez Leighton, in collaboration with Dr. Carolin Otero at CIMIS, is studying the function of these neuropeptides and how they could be used in new therapies.

“In particular, we are interested in understanding how the activities of these neuropeptides contribute to obesity resistance,” states Dr. Pérez Leighton. “The activity of these neurons is related to low-intensity exercise, denominated spontaneous physical activity.” Currently, this project has established differentiated susceptibilities to obesity in an animal model, in addition to characterizing the function of a new peptide and how it is related to physical activity and eating.

Related to this project, Dr. Pérez Leighton also collaborates with the School of Nutrition of the Universidad Andrés Bello, specifically with the school's director, Marcela Giacometto, and the researcher Vanessa Arias. This team is working on personalizing nutritional therapies. Moreover, Dr. Pérez Leighton participates in projects parallel to his primary line of investigation through collaborations with Dr. Danilo González and Dr. Felipe Simon, both from the Universidad Andrés Bello, and with Dr. Eugenia Morselli from the Pontificia Universidad Católica de Chile.

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