és en el cerebro

The impact of stress on the human brain

While the field of neuroscience has significantly advanced over the course of modern history, the human brain continues to hold a number of mysteries. Dr. Jimmy Stehberg, an investigator for the Center of Biomedical Research at the Universidad Andrés Bello, aims to unravel some of these mysteries by investigating the relationship of certain cerebral processes with the appearance of mental disorders such as depression and anxiety.

Through a Fondecyt-financed project, Dr. Stehberg and his team are working on determining the role played by insulin, a hormone within the human brain, in regulating stress. Also being evaluated are the potential consequences of the insulin-controlled stress response on disorders such as depression and anxiety.

"Our principal interest is in understanding how certain neurotransmitters and stress hormones affect the function of insulin to orchestrate a response of the individual to stressful situations," explains Dr. Stehberg.

Among the conclusions already drawn, of note is that a supply of some insulin neurotransmitters can block fear in stressful environments. Dr. Stehberg adds that, "through our research, we have discovered that brain insulin is critical in regulating the anxiety response to new environments and stressful situations."

Dr. Stehberg also leads a related investigation financed through Corfo, the aims of which are to develop anti-depressives and anti-anxiety medications that do not act through the neurons but, rather, through astrocytes, another type of brain cell. These medications promise to have rapid effects as they will function via different mechanisms than the currently available pharmaceuticals.

In parallel, studies are being performed to understand the roles played by astrocytes in different brain functions and mental disorders. "For years it was believed that only neurons had transcendental functions in the brain. However, today we know that astrocytes comprise networks essential for memory and other cerebral functions. The dysfunction of astrocytes is critical in the development of mental and neurological disorders."

"It is due to this that our laboratory is investigating the roles played by astrocytes in pathologies such as post-traumatic stress, depression, and anxiety," explains Dr. Stehberg.