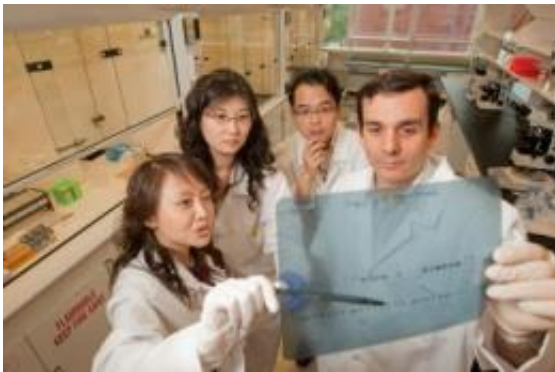


Researchers explain hormonal role in glucose and fat metabolism

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Dr. Rodrigo Barros (far right) works with colleagues at the University of Houston's Center for Nuclear Receptors and Cell Signaling. Credit: Thomas Campbell

Hormone researchers at the University of Houston (UH) have their sights set on providing long-term treatment options for diabetes, obesity and cardiovascular diseases by better understanding estradiol, the most potent naturally occurring estrogen.

They now believe that this [estrogen hormone](#) is a prominent regulator of several body functions in both females and males. While estradiol is more commonly associated with processes and diseases specific to women, the team determined that the hormone actually functions as a unisex hormone with multiple actions. Research has indicated that when there is an excessive or insufficient amount of estradiol present, the

metabolic network becomes imbalanced, which can result in metabolic diseases.

"Female hormones have always been associated with the menstrual cycle, pregnancy, breast-feeding and some diseases, such as osteoporosis and [breast cancer](#), typically associated with women," said Dr. Rodrigo Barros, a research assistant professor with the UH Center for [Nuclear Receptors](#) and Cell Signaling (CNRCS). "Our group, however, has discovered that one of these hormones, estradiol, has much wider actions than previously thought. It is no longer considered exclusively a 'female sex hormone,' but a 'unisex hormone' with multiple actions across several [organ systems](#)."

Working with CNRCS director and professor Dr. Jan-Åke Gustafsson, Barros says that part of their research is dedicated to understanding how estradiol regulates feeding and food metabolism, explaining that this hormone is involved with several metabolic diseases, including eating disorders, obesity and diabetes.

"We believe that all the systems in the body involved with food consumption and metabolism, which include the brain, liver, pancreas, heart, muscles and fat, are connected by estradiol, resulting in a 'metabolic network' regulated by the hormone," Barros said. "Our evidence shows that when too much or too little estradiol is available, this delicate network loses its balance and metabolic diseases set in."

This research has important implications for the average consumer, as well as for physicians. While hormones like estradiol are important for the adequate maintenance of body functioning, they may pose serious risks to a person's health if misused as supplements. This comes into play when people use alternative forms of hormones, such as natural plant derivatives, that may be harmful if used inappropriately.

For specialists dealing with hormonal treatments, this research underscores that they should be aware that several organs and body functions are affected when estradiol is prescribed and may cause or worsen [metabolic diseases](#). Due to the number of organs and functions affected by fluctuating levels of estradiol, its use as a hormonal treatment for patients with delayed puberty, menopausal symptoms, osteoporosis and prostate cancer is a source of debate within the medical and research communities. Exploring the impact of such treatments as reported by Barros and Gustafsson is helpful for keeping these professionals abreast of new research and guidelines.

More information: "Estrogen Receptors and the Metabolic Network"
www.cell.com/cell-metabolism/abstract/S1550-4131%2811%2900312-3

Provided by University of Houston

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