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Testosterone production study challenges 25-year-old scientific dogma

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New research refutes the scientific community's long-held belief that the body needs a specific protein to produce steroid hormones like testosterone, according to a recent study accepted for publication in The Endocrine Society's journal *Endocrinology*.

Steroid hormones trigger changes in the body's cells that are crucial for a variety of life-sustaining functions, including reproduction and stress response. Researchers want to understand exactly how the body produces these hormones in order to develop better treatments for steroid hormone disorders such as hypogonadism and congenital adrenal hyperplasia, conditions in which the testes/ovaries and adrenal glands produce insufficient steroid hormones, respectively.

"For nearly 25 years, the prevailing view in the scientific community has been that a protein called the translocator protein (TSPO) was an essential part of steroid hormone biosynthesis," said the study's lead author Vimal Selvaraj, PhD, of Cornell University in Ithaca, NY. "Our study, however, definitively demonstrated that a deficiency of this protein did not affect testosterone production in male mice."

In the animal study, researchers bred male mice that had a TSPO deficiency in a particular set of testicular cells called Leydig cells. Leydig cells produce testosterone that is critical for the development of the testicles, growth of accessory sex organs, reproductive behavior and fertility. Although TSPO was absent, researchers found the Leydig cells produced normal levels of testosterone and that the animals were fertile.

"This discovery rectifies a huge misconception in the field," Selvaraj said. "These findings will force scientists to reexamine conclusions drawn from numerous peer-reviewed studies of steroid hormone biosynthesis. Down the line, our improved understanding of biosynthesis mechanisms will lead to improved diagnoses and treatments for steroid hormone production disorders."

More information: The article, "Translocator Protein/Peripheral Benzodiazepine Receptor Is Not Required for Steroid Hormone Biosynthesis," was published online, ahead of print.

Provided by The Endocrine Society

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