Gut microbiota steroid sexual dimorphism and its impact on gonadal steroids

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Video Byte

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Abstract

Many metabolic diseases show clear differences in how they manifest between males and females. While gonadal steroid hormones have been suggested as the underlying cause, the gut microbiome could also play a critical role. A new study investigated how the makeup and function of the gut microbiome is related to sex, menopausal status, and circulating gonadal steroids in humans. Important differences in gut microbiota composition and functionality were found between (a) pre-menopausal women and (b) men and post-menopausal women. But obesity overrode those differences. In addition, microbiome profiles were associated with certain gonadal steroids, particularly circulating testosterone and serum progesterone. Interestingly, microbiome signatures could be transferred from human donors to microbiome-depleted male mice, with the microbiome of mice 4 weeks after transplantation predicting donors' testosterone levels. That implies that the microbiota profiles of the recipient mice were influenced by the donors' sex. Long-term and interventional studies could help researchers assess the clinical impact of these findings.