

# A sexually dimorphic hypothalamic response to chronic high-fat diet consumption

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## Resumen

In this review, we discuss the observations that, following chronic high-fat diet (HFD) exposure, male mice have higher levels of saturated fatty acids (FAs) and total sphingolipids, whereas lower amounts of polyunsaturated FAs in the central nervous system (CNS) than females. Furthermore, males, when compared with female mice, have higher levels of inflammatory markers in the hypothalamus following exposure to HFD. The increase in markers of inflammation in male mice is possibly due to the reductions in proliferator-activated receptor gamma coactivator 1 alpha (PGC-1 alpha) and estrogen receptor alpha (ER alpha), which is not recapitulated in female mice. Consistently, hypothalamic inflammation is induced both in male and female ER alpha total-body knockout mice when exposed to a HFD, thus confirming the key role of ER alpha in the regulation of HFD-induced hypothalamic inflammation. Finally, the HFD-induced depletion of hypothalamic ER alpha is associated with dysregulation in metabolic homeostasis, as evidenced by reductions in glucose tolerance and decrements in myocardial function.

## Palabras clave

**KeyWords Plus:** [ESTROGEN-RECEPTOR](#); [INSULIN-RESISTANCE](#); [LIPID-ACCUMULATION](#); [METABOLIC SYNDROME](#); [ALZHEIMER-DISEASE](#); [ER-ALPHA](#); [PLASMA](#); [INFLAMMATION](#); [RISK](#); [MICE](#)

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