

Scientists closer to controlling body temperature in response to 'fight or flight'

October 3 2015

New research published online in *The FASEB Journal* suggests that the fight or flight response that we experience in stressful situations may be controlled by a protein called TRPV1. In the mouse study, researchers found that TRPV1 controls the nerves that release noradrenaline and affect core body temperature. This opens the doors for the development of new strategies to treat the effects of stress on the body.

"The findings of our study give a greater insight into how body temperature is controlled, vital to improving the control of [core body temperature](#) in situations such as anesthesia, [drug overdose](#) and diseases in which core body temperature is pathologically abnormal," said Julie Keeble, Ph.D., a researcher involved in the work from the Institute of Pharmaceutical Science at King's College in London, England.

To make this discovery, Keeble and colleagues conducted experiments using normal mice and mice bred to have no TRPV1 protein in their bodies. Drugs that blocked TRPV1 were administered to normal mice and their body temperature increased. The same drugs had no effect in the genetically altered mice. Normal mice that were given drugs that blocked the effects of noradrenaline before giving the TRPV1 blocker demonstrated a much smaller increase in body temperature. The genetically altered mice surprisingly showed a normal body temperature under normal conditions, which led to further study. The researchers found that the "fight or flight" response in the mice was reduced, including after administration of amphetamine, which is known to increase levels of noradrenaline.

"This protein, TRPV1, present on our nerve cells, has been known to control pain. Now we learn that it is also critical for controlling body temperature in response to stress hormones like adrenaline," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "It sheds a new molecular light on the 'switch' that controls a good part of the body's preparation for "fight or flight" response, first described by Harvard's Walter B. Cannon almost a century ago."

More information: Khadija M. Alawi, Aisah A. Aubdool, Lihuan Liang, Elena Wilde, Abhinav Vepa, Maria-Paraskevi Psefteli, Susan D. Brain, and Julie E. Keeble. The sympathetic nervous system is controlled by transient receptor potential vanilloid 1 in the regulation of body temperature. *FASEB J.* October 2015 29:4285-4298; [DOI: 10.1096/fj.15-272526](https://doi.org/10.1096/fj.15-272526)

Provided by Federation of American Societies for Experimental Biology

Citation: Scientists closer to controlling body temperature in response to 'fight or flight' (2015, October 3) retrieved 27 April 2024 from <https://phys.org/news/2015-10-scientists-closer-body-temperature-response.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.