

Reduced activity of a brain protein linked to post-traumatic stress disorder

October 27 2015

People with post-traumatic stress disorder (PTSD) have reduced activity of the protein serum and glucocorticoid regulated kinase 1 (SGK1) in their prefrontal cortices, and experimentally reducing the protein's activity in rats leads to PTSD-like behavior, according to a new study in *PLOS Biology*. The study by Pawel Licznarski, Ronald Duman and colleagues of the Department of Psychiatry at Yale University publishing in the Open Access journal *PLOS Biology* on Oct. 27th, suggests that augmenting activity of SGK1 may be therapeutic in PTSD.

Performing a whole-genome expression screen on the post-mortem brains of six subjects with PTSD, the authors found that expression of SGK1 was reduced in the [prefrontal cortex](#) by over 80% compared to controls. The subjects studied were part of a PTSD brain bank, the first of its kind, established by the authors. To understand the cellular mechanisms at work, the authors turned to rats, and showed that those rats with lower SGK1 activity had higher levels of learned helplessness in response to a shock (a behavior thought to mimic one aspect of PTSD). Experimentally reducing SGK1 activity in [rats](#) induced learned helplessness, while overexpressing the protein reduced it. Reducing SGK1 activity also induced several other PTSD-like behaviors, and caused cellular changes in prefrontal cortical neurons consistent with an augmented fear response.

Together, these results indicate that a reduction in SGK1 activity likely contributes to PTSD. Larger postmortem studies will be needed to confirm these findings, but if they are borne out, SGK1 or other proteins

with which it is linked may provide new targets for medications to reverse the effects of PTSD, which, according to the Veterans Administration, affects over 5% of the United States population, and over 10% of veterans.

More information: Licznernski P, Duric V, Banasr M, Alavian KN, Ota KT, Kang HJ, et al. (2015) Decreased SGK1 Expression and Function Contributes to Behavioral Deficits Induced by Traumatic Stress. *PLoS Biol* 13 (10): e1002282. [DOI: 10.1371/journal.pbio.1002282](https://doi.org/10.1371/journal.pbio.1002282)

Provided by Public Library of Science

Citation: Reduced activity of a brain protein linked to post-traumatic stress disorder (2015, October 27) retrieved 17 April 2024 from <https://medicalxpress.com/news/2015-10-brain-protein-linked-post-traumatic-stress.html>

<p>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.</p>
--