

Physiology (The American Physiological Society) |  Full Access

Inhibition of glutathione synthesis does not increase oxidative stress in response to repetitive stretch-shortening contractions

Melinda S Hollander, Brent A Baker, Michael L Kashon, and Robert G Cutlip

Published Online: 1 Apr 2007

Abstract

We investigated effects of glutathione (GSH) synthesis inhibition on the oxidative stress status of tibialis anterior (TA) muscles in young (12 wk) and old (30 mo) Fisher 344 × Brown Norway F1 male rats. L-Buthionine (S,R)-sulfoximine (BSO), an inhibitor of GSH synthesis, was administered to rats in the drinking water at 10mM. Left dorsiflexor muscles of old and young rats were exposed 3 times a week for 4.5 weeks to a protocol of 80 maximal stretch-shortening contractions (SSC) per exposure *in vivo*. TA muscle response was characterized by measurement of malondialdehyde (MDA) as a marker of lipid peroxidation, which is used as an indicator of oxidative stress. GSH was measured to indicate effects of treatment. GSH levels were lower in BSO treated rats compared to unsupplemented rats in old and young ($p < 0.05$) indicating that BSO was effective in decreasing GSH. The LTA presented with a higher MDA level in old BSO treated rats compared to the RTA ($p < 0.05$). LTAs from old rats had higher MDA compared to young rats in the BSO, unsupplemented, and anesthesia groups (all $p < 0.05$). Based on our findings, it does not appear as if decreased GSH levels or prolonged anesthesia affects the oxidative stress status of the TA muscle after exposure to repetitive SSCs. Disclaimer: "Findings and conclusions in this abstract have not been formally disseminated by NIOSH and should not be taken to represent any agency determination or policy."



9650 Rockville Pike
Bethesda, MD 20814
301-634-7000

[Terms & Conditions](#) | [Privacy Policy](#)

© 2019 by the Federation of American Societies for Experimental Biology