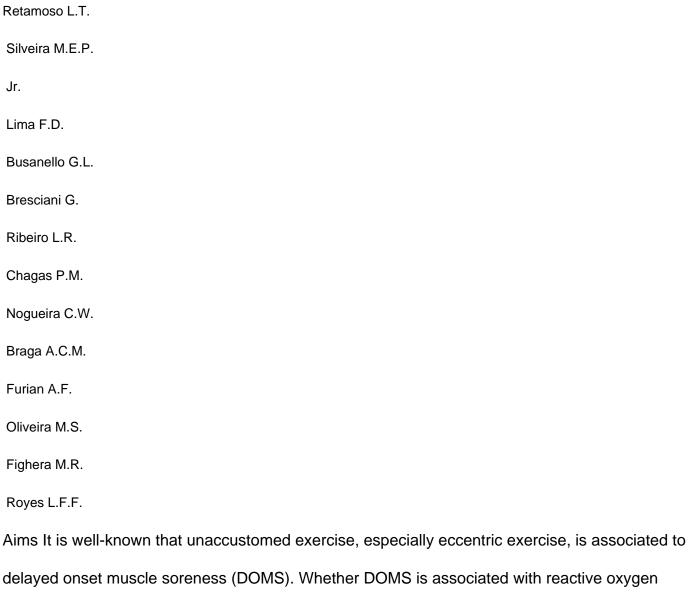
Increased xanthine oxidase-related ROS production and TRPV1 synthesis preceding DOMS post-eccentric exercise in rats



Aims It is well-known that unaccustomed exercise, especially eccentric exercise, is associated to delayed onset muscle soreness (DOMS). Whether DOMS is associated with reactive oxygen species (ROS) and the transient receptor potential vanilloid 1 (TRPV1) is still an open question. Thus, the aim of this study was to investigate the association between TRPV1 and xanthine oxidase-related ROS production in muscle and DOMS after a bout of eccentric exercise. Main methods Male Wistar rats performed a downhill running exercise on a treadmill at a - 16° tilt and a constant speed for 90 min (5 min/bout separated by 2 min of rest). Mechanical allodynia and grip force tests were performed before and 1, 3, 6, 9, 12, 24, 48 and 72 h after the downhill running. Biochemical assays probing oxidative stress, purine degradation, xanthine oxidase activity, Ca2 + ATPase activity and TRPV1 protein content were performed in gastrocnemius muscle at 12, 24, and

48 h after the downhill running. Key findings Our statistical analysis showed an increase in mechanical allodynia and a loss of strength after the downhill running. Similarly, an increase in carbonyl, xanthine oxidase activity, uric acid levels and TRPV1 immunoreactivity were found 12 h post-exercise. On the other hand, Ca2 + ATPase activity decreased in all analyzed times.

Significance Our results suggest that a possible relationship between xanthine oxidase-related ROS and TRPV1 may exist during the events preceding eccentric exercise-related DOMS. © 2016 Elsevier Inc. All rights reserved.

Elsevier Inc. All rights reserved. **DOMS** Eccentric exercise Oxidative stress TRPV1 Xanthine oxidase adenosine triphosphatase (calcium) reactive oxygen metabolite uric acid vanilloid receptor 1 xanthine oxidase adenosine triphosphatase (calcium) antioxidant reactive oxygen metabolite Trpv1 protein, rat vanilloid receptor xanthine oxidase adult

allodynia

animal experiment

animal tissue
Article
delayed onset muscle soreness
enzyme activity
enzyme degradation
exercise
gastrocnemius muscle
grip strength
high performance liquid chromatography
male
motor performance
muscle disease
nonhuman
protein determination
protein synthesis
rat
running
animal
biosynthesis
drug effects
enzymology
exercise
hand strength
hyperalgesia
metabolism
myalgia

physiology
protein carbonylation
psychology
skeletal muscle
Wistar rat
Animals
Antioxidants
Calcium-Transporting ATPases
Hand Strength
Hyperalgesia
Male
Muscle, Skeletal
Myalgia
Physical Exertion
Protein Carbonylation
Rats
Rats, Wistar
Reactive Oxygen Species
Running
TRPV Cation Channels
Uric Acid
Xanthine Oxidase