

## News Summary

### **OR10-5: A natural hormone may protect muscle from atrophy**

Researchers have found a potential new treatment for the common problem of muscle atrophy. Results of the animal study will be presented Thursday at The Endocrine Society's 91st Annual Meeting in Washington, D.C.

Muscular atrophy is a debilitating process that results in an extensive loss of muscle mass and function, which greatly worsens quality of life. It occurs in diseases such as cancer, diabetes, AIDS and heart failure, negatively affecting the patients' prognosis. Also, muscular atrophy can occur with aging, inadequate food intake such as in anorexia nervosa, or disuse (in those who are bedridden or who must keep a limb immobile) or as a side effect of glucocorticoid steroid therapy. Nerve injury also triggers severe muscular atrophy.

Currently, there are few options to treat the problem. Some of the treatments, such as anabolic steroids (testosterone) and insulin-like growth factor 1 (IGF-1), raise concerns about safety and effectiveness, said study co-author Andrea Graziani, PhD. He is a molecular biologist with the Department of Clinical and Experimental Medicine and the Biotechnology Center for Applied Medical Research, University of Piemonte Orientale, Novara, Italy.

"Because of the wide impact of muscular atrophy on public health, it is of pivotal importance to find new and better drug strategies to treat it," Graziani said.

Graziani and his co-workers are studying des-acyl ghrelin, a form of ghrelin, the appetite-stimulating hormone found in the body. Until recently, researchers thought that des-acyl ghrelin was inactive because it does not share the main activities of ghrelin—stimulating appetite, fat and the release of growth hormone.

However, Graziani's group recently found that des-acyl ghrelin shares some biological activities with ghrelin, such as stimulating differentiation of other cells, including—important to this study—cells that are precursors to skeletal muscle cells.

In this new study, the researchers discovered that des-acyl ghrelin has a direct anti-atrophic activity on the skeletal muscle of mice with muscular atrophy caused by either denervation (nerve injury) or fasting. Mice that were genetically altered to have increased levels of des-acyl ghrelin had less skeletal muscle loss than the untreated control mice. This held true for both causes of muscular atrophy.

The mechanism by which des-acyl ghrelin protects muscle against atrophy is not yet known, the authors reported. However, it is distinct from the action of anabolic steroids and IGF-1.

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