TITLE: Melanocortin Receptor Targets in an Experimental Murine model of Inflammatory Myositis

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RESEARCH PROJECT DESCRIPTION

The inflammatory myopathies, dermatomyositis (DM) and polymyositis (PM), are diseases characterized by inflammatory infiltration of muscles. Interestingly, adrenocorticotropic hormone (ACTH) gel, a long-acting formulation of porcine ACTH hormone that contains within its sequence several pro-opiomelanocortin peptides, was first granted approval for treatment of PM and DM in 1952, prior to the FDA requiring rigorous testing. However, ACTH gel has not been widely used by clinicians, as the data supporting use are limited to a recent case series of five myositis patients who were recalcitrant to traditional treatments and who demonstrated improved muscle strength on ACTH therapy. At the in vitro level, one of the melanocortin peptides in ACTH gel, α-MSH, attenuates inflammation via selection activation of melanocortin receptors (MCR1 and MCR3). This proposal will examine whether the therapeutic benefits of ACTH gel can be reproduced by injection of a single melanocortin peptide, α-MSH. The proposed experiments will test the hypothesis that selective activation of MCR1 alters disease activity in a mouse model of inflammatory myositis. Our goal is to generate preliminary data with α-MSH and compare results to those obtained by stimulation of other melanocortin receptors with ACTH and γ-MSH. Outcome measures will include assessment of muscle weakness, inflammation and necrosis in a well-characterized experimental model of myositis in mice.

ROLE OF MEDICAL STUDENT – The medical student will perform experiments that evaluate muscle strength in mice and will be responsible for analysis and interpretation of the resulting data.

FUNDING SOURCE – Gatorade Pilot Project

RELEVANT PUBLICATIONS –
COMPLETE DESCRIPTION SHOULD BE NO MORE THAN APPROXIMATELY 500 WORDS
USE 1 INCH MARGINS
USE 12 POINT ARIAL FONT
USE SINGLE LINE SPACING
DO NOT USE FIGURES AND DIAGRAMS