1-A-03 The role of local muscular steroidogenesis on muscle adaptation

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Purpose: Androgen such as testosterone plays important roles in developing both strength and mass of skeletal muscle. Circulating testosterone is also transformed into bioactive androgen metabolite dihydrotestosterone (DHT) by 5α-reductase (srd5a1). However, the physiological and morphological role of bioactive androgen metabolism through srd5a1 on skeletal muscle homeostasis is unknown. **Methods and Results:** First, we manufactured the pcDNA3-srd5a1-flag expression vector and evaluated its protein expression by western blot. Moreover, the C2C12 cell that it was transfected srd5a1 vector plasmid activated tissue DHT production by the testosterone addition. Next, srd5a1 vector plasmid (10ug) to mouse tibialis anterior muscle was transduced using electroporation method (100V, 8reps). One week later, its transduced skeletal muscle weight was increased as compared with control muscle. In addition, level of muscular DHT concentration and p-p70s6k protein expression was increased at srd5a1 plasmid vector transduced skeletal muscle. **Discussion:** These data demonstrated that activation of local bioactive androgen metabolism pathway through srd5a1 may be involved in exercise-induced skeletal muscular adaptation.

Key Word: local steroidogenesis, skeletal muscle, exercise

1-A-04 Effect of Enzymatically Modified Rutin supplementation on hypertrophy of mouse plantaris muscle.

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Purpose: Muscle damage is occurred by excessive exercise training. Recently, it has been suggested that anti-oxidants and/or anti-inflammatory agents supplementation are effective for suppressing muscle damage and inducing muscle hypertrophy. The purpose of this study was to examine the effect of EMR supplementation on muscular hypertrophy model mice.

Methods: Male ICR mice underwent ablation of the gastrocnemius and the soleus muscle to induce compensatory hypertrophy of the plantaris muscle. EMR and EMR-mixed whey protein were administered to half of each group for 3weeks, after which the cross-sectional area and minimum fiber diameter of the plantaris muscle fiber were measured.

Results: The muscle cross-sectional area and minimum fiber diameter of the EMR group and the EMR-mixed whey protein group significantly increased compared to their respective control groups.

Discussion: EMR and EMR-mixed whey protein were effective for muscle hypertrophy in compensatory overload.

Key Words: anti-oxidant, anti-inflammation, damaged muscle, rutin, quercetin