TACSM Abstract

Old Mice Exhibit Greater Skeletal Muscle *Cxcl10* Gene Expression

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ABSTRACT

Advanced age is associated with impairments in glucose tolerance increasing the risk for metabolic syndrome and type II diabetes. Preliminary data from our lab demonstrates greater T-cell infiltration in the skeletal muscle with age and that depletion of T-cells improves glucose tolerance in old mice. The mechanisms responsible for increased T-cell recruitment to the skeletal muscles with age is not known. **PURPOSE:** The purpose of this study was to determine whether gene expression of the T-cell recruiting chemokine's *Cxcl10, Ccl5, and Ccl2* are altered with advanced age in mouse skeletal muscle. **METHODS:** 4 young mice (~6months) and 5 old mice (~24 months) were euthanized and the gastrocnemius was snap frozen and kept -80°C until further use. Muscles were homogenized and the RNA was extracted using the phenol chloroform method. After the extraction of the RNA, the complimentary DNA (cDNA) was synthesized and used for qPCR to assess the gene expression of *Ccl2, Cxcl10, Ccl5*, and *18s*. The *18s* gene was used as the endogenous control. Relative gene expression was determined using the delta delta CT method. Group differences were assessed with an independent sample t-test. **RESULTS:** All data are expressed as mean ± standard error. Relative *Ccl2* gene expression was 1.76 ± 0.82 in young mice and 1.96 ± 0.59 in old mice (p=0.42). Relative *Cxcl10* gene expression was 0.88 ± 0.24 in young mice and 13.86 ± 1.25 in old mice (p=0.04). Relative *Ccl5* gene expression was 3.88 ± 3.34 in young mice and 1.32± 0.28 in old mice (p=0.21). **CONCLUSION:** Overall, this study suggests that *Cxcl10* but not *Ccl2* and *Ccl5* gene expression is greater in the gastrocnemius muscle of old mice. These data suggest that increased production of Cxcl10 may be responsible for skeletal muscle T cell infiltration with age. Our study suggests that the T-cell recruiting chemokine *Cxcl10* may be a target to preserve metabolic health in older adults.