

# Research on the prevention of Sarcopenia :Preventive effects of Estrogen against chronic inflammation

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The purpose of this study is to determine the effects and mechanisms of chronic inflammation, which is increased by age-related estrogen (E2) decline, on muscle. Abdominal aortic aneurysm (AAA) is a disease that increases with age in the context of chronic inflammation. Ovariectomy (OVX) and E2 supplementation were performed in female C57BL6 mice (20 weeks old), and 4 weeks later, inflammation was induced by AAA operation. After another 4 weeks, the effects on the aorta and skeletal muscles (gastrocnemius and soleus muscles) were examined. The OVX + AAA group showed significant enlargement of the aortic diameter and destruction of the tunica media and increased aneurysm formation compared to the sham operation + AAA group, but E2 supplementation suppressed the increased aneurysm formation. Gastrocnemius weight did not change, but soleus weight decreased with OVX+AAA and was suppressed by E2 supplementation. Muscle strength (Grip test) was also decreased by OVX+AAA, which was suppressed by E2 supplementation. Muscle endurance (wire hang test) showed no significant change. These results suggest that E2 reduction induces systemic chronic inflammation, which may lead to the development of sarcopenia.