



## Effect of Black Tea Polyphenol Fraction on Muscle Atrophy Caused by Denervation

Y.Aoki, T.Ozawa, O.Numata, T.Takemasa \*

University of Tsukuba, Tsukuba, Japan

\*Corresponding author: takemasa.tohru.gm@u.tsukuba.ac.jp

### Abstract

**Introduction:** Some papers reports that polyphenols have good effects on skeletal muscle. Our laboratory originally purified high-molecular-weight polyphenols extracted from black tea. We named it Mitochondria Activation Factor (hereafter, MAF), because MAF enhanced mitochondrial membrane potential of ciliated protista **Tetrahymena pyriformis** (Fujihara **et al.**). Additionally, we reported polyphenol fraction containing MAF (we named this fraction E80) promote muscle growth (hypertrophy) and phosphorylation of molecules regulating muscle growth such as mTOR, S6K and S6, in mice during overload (Y. Aoki **et al.**, 2017). Subsequently, we assessed whether E80 affect muscle mass change induced by denervation. Denervation cause significant decrease of muscle mass (atrophy). We confirmed E80 has a potential for promoting muscle mass growth, then we consider E80 also has a potential for preventing muscle loss.

**Methods:** Mice were anesthetized with isoflurane, and then one sciatic nerve was isolated, and transected in the middle of the femur. After 4 days and 7days of denervation, we examined body weight and wet weight of hindlimb muscle (soleus, plantaris, gastrocnemius).

**Results:** There is no difference in wet weight of plantaris and gastrocnemius muscle at Day 4 and Day 7. However, statistically significant difference is observed between control and E80 group in soleus muscle at Day 7.

**Conclusions:** E80 may have a potential for preventing muscle atrophy.

**Keywords:** Atrophy, Hypertrophy, Polyphenol, Muscle