

Effects of oxytocin in sarcopenia in rats

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Generally, the regenerative ability of skeletal muscle declines with age. The greater the muscle mass is also the longer the lifespan. Previous study showed that oxytocin (OT), the posterior pituitary hormone, decreased with age, and administration of OT regenerated muscle in aging mice. However, the mechanism of OT with muscle atrophy is unknown. In present study, we showed a muscle atrophy model with tail suspension, using OT monomeric red fluorescent protein 1 transgenic rat (OT-mRFP1 Tg rat) and investigated changes of central OT in OT-mRFP1 Tg rat. Two weeks after tail suspension, the soleus muscle, an anti-gravity muscle, has atrophied by approximately 40% in young (3 months old) OT-mRFP1 Tg rat. We could observe that the intensity of red fluorescence significantly increased in the posterior pituitary and supraoptic nucleus in young OT-mRFP1 Tg rats. The intensity of red fluorescence increased, not significantly, in the paraventricular nucleus in young OT-mRFP1 Tg rats. I am preparing for the experiments with aging (24 months old) OT-mRFP1 Tg rat. I would like to clarify the effects of OT on muscle atrophy and show a new approach for therapy in rehabilitation for the sarcopenia, disuse syndrome, and locomotive syndrome in near future.