

Abstract
#12-001

Spinal cord injury (SCI) causes various neurological problems as well as universal reductions in sublesional muscle mass, which has significant negative effects on rehabilitation. Moreover, since muscle is a major organ for metabolism, muscle atrophy in SCI patients has been associated with increased risk for a number of secondary metabolic co-morbidities, including diabetes mellitus, metabolic syndrome, and cardiovascular disease. However, precise molecular mechanism underlying the muscle atrophy has not been identified in SCI. In addition, there is no effective treatment to prevent it.

Our group has identified various neuroprotective roles of estrogen in SCI. Estrogen is also known to exert myoprotective roles. Hence, we anticipate that estrogen may facilitate recovery from spinal cord damage, and prevent muscle atrophy in SCI. In this research project, we will first investigate molecular changes in the sublesional skeletal muscle of SCI animals. We will then examine whether estrogen will prevent such molecular changes and resultant muscle atrophy. We will use premarin (PRM), an FDA-approved formulation of conjugated equine estrogens, so that we can minimize the side effects of estrogen. In summary, our proposed project is innovative in terms of focusing on pathomechanism of skeletal muscle atrophy, as well as of providing treatment approach for it.