SENACTIV®

MECHANISM OF ACTION

A INCREASE ENDURANCE PERFORMANCE

Increase Glycogen in Muscles

By reducing muscle lipid peroxidation and increasing insulin sensitivity as evidenced by decreaesed TBARS, TNFα, and increased IL-10, and glycogen replenishment in exercised muscle.

Increase Energy in Cells

By reducing oxidative stress and increasing mitochondria density in exercised muscle as evidenced by increased citrate synthase activity.

Increase Time to Exhaustion

Increases time to exhaustion by 20% in a electrically braked cycle ergometer exercise at 80% VO_2max in a cross-over human clinical trial.

B SPEED UP MUSCLE FATIGUE RECOVERY

Decrease Muscle Inflammation during Exercise

By reducing lipid peroxidation in exercised muscle as evidenced by decreased TBARS, MDA, TNFα, and increased IL-10, and 20% increase in endurance performance at 80% VO_2max.

Accelerate Muscles Regeneration

By clearing senescent muscle cells as evidenced by decreased SA-β-gal and $P16^{ink4a+}$ muscle cells, apoptotic nuclei, iNOS, and IL-6, and increasing new muscle cell growth as evidenced by increased Pax7, Mfy5, total glutathione, and centrally nucleated myofibers.

Accelerate Muscle Inflammation Recovery after Exercise

By accelerating inflammation recovery as evidenced by decreased TBARS, IL-6, MDA, creatine kinase (CK), and increased citrate synthase activity, and glycogen replenishment.

C INCREASE MUSCLE REGENERATION

Decrease Senescent Cells

By increasing macrophage phagocytosis activity as evidenced by decreased SA-β-gal and $P16^{ink4a+}$ muscle cells, apoptotic nuclei, iNOS, and IL-6 in exercised muscle.

Increase New Muscle Growth

By accelerating myogenesis as evidenced by the restoraton of total glutathione and centrally nucleated myofibers.

By increasing $Pax7^{+}$, Mfy5, total glutathione, and centrally nucleated myofibers in exercised muscle.

Lower Muscle Endohelial Progenitor Cell Aging

As evidenced by decreasing $P16^{ink4a}$ and MPO mRNA in exercised muscle.