

## Nanochemistry and biotechnology

### **C<sub>60</sub> fullerenes as promising agents for the prevention and treatment of ischemic pathologies of the skeletal muscle**

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Among the muscle pathologies caused by skeletal muscle traumas, the ischemic injuries make up over 35% from all injuries of locomotor apparatus. Given that the fact that reactive oxygen species are the most destructive in muscle's ischemic injury, the usage of bioavailable C<sub>60</sub> fullerenes as powerful antioxidants can considerably improve muscle resistance to ischemia and accelerate its post-traumatic recovery. The efficiency of C<sub>60</sub> fullerene therapeutic using against the ischemic injuries of small intestine, lungs and brain was recently proved. The research showed that the effectiveness of water-soluble C<sub>60</sub> fullerene nanoparticles substantially depends on the time of its using as to the beginning of ischemia, the dose and the route of its administration in vivo. The best therapeutic effect was shown when the drug was injected before ischemia (protective effect) and under its intramuscular administration (treatment effect) resulting the general improvement in the mechanical kinetic and biochemical parameters of functioning muscles. Thus, the development of nanobiotechnology with using water-soluble C<sub>60</sub> fullerenes opens up new possibilities of the prevention and treatment of the skeletal muscles' ischemic pathologies.