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## P049-T | Protective effect of nitrite in brain ischemia/reperfusion via modulation of mitochondrial respiration

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Nitrite, once considered an inert metabolic endpoint of nitric oxide (·NO), has more recently emerged as a metabolic precursor of ·NO in vivo. This alternative source of ·NO may play a critical role in the brain under emergency conditions such as ischemia, when enzymatic ·NO production is hindered due to lack of oxygen. Evidence shows that nitrite is protective in situations of ischemia/reperfusion and appears to be beneficial in aging and neurodegeneration. Most relevantly, nitrite concentration in vivo can be modulated by diet through the ingestion of nitrate rich foods, being generally associated with increased longevity and lower incidence of cardiovascular disease.

One putative target for nitrite's protective bioactivity in ischemia is through modulation of mitochondrial respiration. Here we used high-resolution respirometry to determine the effects of nitrite on brain tissue respiration in conditions of ischemia/ reperfusion. We applied an in vitro ischemia/reperfusion protocol to permeabilized rat hippocampal tissue and determined the differences of complex I supported respiration in the presence and absence of nitrite. While under control (no nitrite) conditions, a significant increase in respiratory rate is observed upon re-oxygenation ("oxidative burst"), in the presence of nitrite (10 µmol/L), this burst is abolished. This inhibition may prevent the increased production of reactive oxygen species associated with this oxidative burst and may be one of the mechanisms through which nitrite is protective during brain ischemia.

Future studies are focused on confirming nitrite reduction to ·NO as a requirement for the inhibition of the oxidative burst as well as pin-pointing the site o nitrite/-NO bioactivity within the mitochondrial respiratory chain. Furthermore, we will explore if ascorbate can potentiate the protective effects of nitrite under ischemia/reperfusion conditions in brain tissue.

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## P051-T | Iron accumulation in tissues in rat under gravitational unloading

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During space flight, a change in iron metabolism occurs. An excess of iron can lead to the formation of reactive oxygen species and induce ferroptosis. One method for studying the effects of iron accumulation in tissues and blood is the electron paramagnetic resonance spectroscopy method. The purpose of this work was to study the effect of gravitational unloading on the content of iron oxides in the tissues of the body, to estimate the parameters of the signals of electron magnetic resonance (EMR), to establish their source. Experiments were performed on nonlinear rats (n = 7), gravitational unloading was modeled by the method of antiorthostatic hypokinesia. In the tissues of the heart, lungs, liver and muscles, as well as in some blood samples, EMR signals were identified depending on the orientation. A comprehensive analysis of the characteristics of the EMR signals allowed us to determine the source of the signals in the form of crystalline iron oxides in magnetite or ferrihydrite (in crystalline ferritin basic) forms. Three types of signals were identified, corresponding to different spatial forms of accumulation of biogenic magnetite and ferritin. There were no similar signals in the tissues of the control group of animals. Thus, under conditions of gravitational unloading, there is an abnormal accumulation of aggregated forms of iron in the tissues of the lung, heart, liver, muscles, which indicates a change in iron metabolism and an abnormal accumulation of iron in the tissues and blood of rats. Effects on iron metabolism may be mediated by changes in hepatic hepcidin expression.

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## P052-T | Redox state of adipose tissue and gastric cancer: connection with the body mass index and distance from the tumor

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**Background**: Excess body weight is causally linked to an increased risk of different cancer types, including