Novel Methods to Prevent Post-resuscitation Injury

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Technology description

Summary

A team of researchers at the University of Chicago have developed novel methods of inhibiting the generation of reactive oxygen species for the prevention of injury following hypoxic events. This technology has the potential to improve patient outcomes after acute myocardial infarction, ischemic stroke, liver and kidney transplantation, and coronary artery bypass graft surgery.

Description

Dr. Terry Vanden Hoek and his associates at the University of Chicago have found that a burst of reactive oxygen species (ROS) occurs during reperfusion that significantly contributes to the indirect tissue injury and is linked to subsequent cell death. Furthermore, they have shown that reoxygenation in the presence of a temporary and reversible electron transport inhibitor or under hypercarbic conditions reduces post-resuscitation injury. They have demonstrated that partial, reversible inhibition of the mitochondrial electron transport chain with stigmatellin during reoxygenation attenuates ROS production in cells, enhances recovery of cell activity and tissue function, reduces cytotoxicity, increases cell viability, and reduces extracellular oxidant stress. Modulation of CO2 levels during reperfusion also enhances recovery of cell activity and tissue function and increase cell viability after ischemic injury.

Institution

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