LSUHSC Research Breakthrough Could Limit Brain Trauma Damage

The irreversible brain damage that occurs during the first hours following a stroke or head injury could be limited or even avoided by activating a new survival brain mechanism discovered by Dr. Nicolas Bazan and his team of researchers at the LSU Health Sciences Center in New Orleans (LSUHSC). In addition, Dr. Bazan has invented and patented a new drug to achieve the same goal.

When brain cells are damaged by trauma, seizure, or in such neurodegenerative diseases as Alzheimer's, a chain of events leading to a form of cell death known as apoptosis is set in motion. "If effective neuroprotective drugs were given at the earliest possible moment after stroke or head trauma, catastrophic brain damage might be avoided or greatly limited. They could be used by emergency-room physicians on stroke victims and by other first-responders at the scene of car accidents, sports injuries and other head trauma situations," says Dr. Bazan.

It was while conducting research funded by the National Science Foundation (NSF) EPSCoR program that Dr. Bazan discovered a chemical signal made in the brain that promotes survival of the brain and retina: Neuroprotectin D1 is the name he gave to this new brain messenger. It has the potential to protect the eyes and brains of people who suffer a stroke or head trauma, blinding diseases of the retina such as age-related macular degeneration, and other neurodegenerative diseases.

In addition, supported by the NSF-EPSCoR, Dr. Bazan and his colleagues invented and patented a synthetic neuroprotective drug, named LAU-0901, which inhibits the infiltration of white cells and other changes that contribute to the severity of stroke. "When we administered LAU-0901 to mice after an experimental stroke, the amount of stroke-damaged brain tissue was reduced by approximately one half," adds Dr. Bazan.

"Our discovery is opening up an entirely new area of research. We are beginning to understand how the brain, using its own chemicals, can stand up to and fight insults, trauma or neurodegeneration." (See page 2)
The ability of the newly discovered neuroprotective drug to inhibit the brain damage of a stroke (white color) is depicted in the above shown brain sections of mice. Immediately following a stroke, those in the left column were administered Neuroprotectin D1 in a solution (vehicle) while those in the right column were administered the solution only.