

Can GPX Fight Human Brain Degeneration?



Dr. Guy Massicotte

Understanding the cellular basis of neural deterioration could open the door to helping the many people in the population afflicted with memory problems, cerebral ageing, Alzheimer's and Parkinson's diseases, and various diseases that deprive brain cells of oxygen.

That's the challenge driving Professor Guy Massicotte and his colleagues – experts in electrophysiology and molecular biology – at l'Université du Québec à Trois-Rivières.

The researchers' work on the human protein GPX has revealed the protective role of this antioxidant in fighting the free radicals that damage the brain's nerve cells.

The researchers genetically modified a mouse to express the human GPX protein in the mouse brain. Then the mouse was deprived of oxygen. Amazingly, within the space of an hour the animal had recovered. And the neurons of the hippocampus – a brain area crucial to the creation of memories – displayed virtually no ill effects whatsoever!



The hippocampus is one of the areas of the brain crucial to the formation of memory. This is an area to which the GPX protein would offer special protection against cerebrovascular accidents.

Although researchers do not yet know whether human neurons would react as positively to GPX, the efficiency of the protein in inhibiting the harmful effects of free radicals in the hippocampus was established.

It will take much more work to find out whether GPX can repair brain damage caused by lack of oxygen. It will be necessary, says Dr. Massicote, to determine if nerve cells can be stimulated into producing greater quantities of GPX. In the not-too-distant future, genetic engineering tools may make this feasible.

For the time being, however, the researchers continue evaluating GPX as a possible protective against Alzheimer's disease. Who knows? Maybe GPX will, someday, reverse the neuron ageing process?

For more information, please contact
Dr. Guy Massicotte:
Tel.: (819) 376-5011, ext. 3399
E-mail: guy_massicotte@uqtr.quebec.ca

Yasmine El Jamaï
Public Affairs Officer
Tel.: (613) 947-5273
Fax. (613) 943-0742
E-mail: yasmine.eljamai@nserc.ca