April 2013

Biology @ Acadia

RELAXIN DOES NOT REDUCE APOPTOSIS RESULTING FROM OXYGEN AND GLUCOSE DEPRIVATION IN CULTURED RAT BRAIN SLICES

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Evidence suggests that relaxins, peptides belonging to the insulin/relaxin superfamily, may have other roles in the body, including the protection of tissues during periods of ischemia. Recent evidence suggests that relaxin has neuroprotective actions in response to ischemia as it does in other tissues like the myocardium. In this study, we investigated the neuroprotective potential of two relaxin peptides, H2 (the main circulating form) and H3 (found in large concentrations in the brain) human relaxin, by testing whether either relaxin inhibits apoptosis (programmed cell death) resulting from ischemia in organotypic rat brain slice cultures. Apoptosis was assessed indirectly using an ELISA to measure histone content in total protein isolated from brain slices. In addition, an immunofluorescence assay was used to identify caspase-3-positive cells in slices. Cultured brain slices from day-10 neonatal rats were randomly divided into four treatment groups each lasting 1 hour (n=12/group): oxygen and glucose-deprived (OGD), normoxic, OGD with 100 nM H2 relaxin and OGD with 100 nM H3 relaxin. We found that there was no significant reduction in the degree in apoptosis following treatment with either relaxin. These findings suggest that relaxins are not protecting neural tissue by inhibiting apoptosis. However, neuroprotective effects of relaxin may occur earlier during ischemia by preventing necrotic cell death. As single doses of relaxin were used in this study, it is also possible that higher doses may have inhibited apoptosis.

Julia Harrison graduated from Armbrae Academy in Halifax, Nova Scotia in 2009 and is currently completing her Honours thesis in her 4th year in Biology at Acadia. Over the years, Julia has received various awards and scholarships, both institutional and national, including two Undergraduate Student Research Awards from the Natural Sciences and Engineering Research Council of Canada in 2011 and 2012. Julia has also achieved Deans' List placement in both 2010 and 2012. This academic year, Julia has had the privilege of working as a Teaching Assistant for Organisms and their Environment, Vertebrate Physiology 1, and Introductory Neuroscience. In her spare time, Julia enjoys painting, playing the piano and outdoor activities like soccer, skiing, and camping. Julia also has a love of travel and the performing arts, in which she was heavily involved from elementary through high school. As of January 2013, Julia has been accepted into a graduate program at Dalhousie University in Halifax, Nova Scotia in the Department of Medical Neuroscience. Her future research in this department will focus on motor neuron detachment in amyotrophic lateral sclerosis (otherwise known as ALS, or Lou Gehrig's disease).