

Marie Monfils Research Update Report

Chronic cerebral hypoperfusion, a risk factor for mild cognitive impairment and Alzheimer's disease, affects mitochondrial respiration and memory consolidation. Therefore, drugs that improve mitochondrial function may be appropriate cognitive treatments for cerebral hypoperfusion. Methylene blue (MB) crosses the blood-brain barrier and at low doses serves as an electron cyler in the mitochondrial electron transport chain. Previous studies implicate MB in both memory enhancement and neuroprotection. In one of our recent studies, we treated rats that had received strokes with Methylene Blue or a control substrate for one month. Animals went through a battery of behavioral tests. We found that those with strokes showed worse performance in certain tasks, and that daily Methylene Blue attenuated those deficits. The results suggest that Methylene Blue may be beneficial for conditions involving chronic cerebral hypoperfusion, such as mild cognitive impairment, vascular dementia, and Alzheimer's disease.