Boost for dopamine packaging protects brain in Parkinson's model

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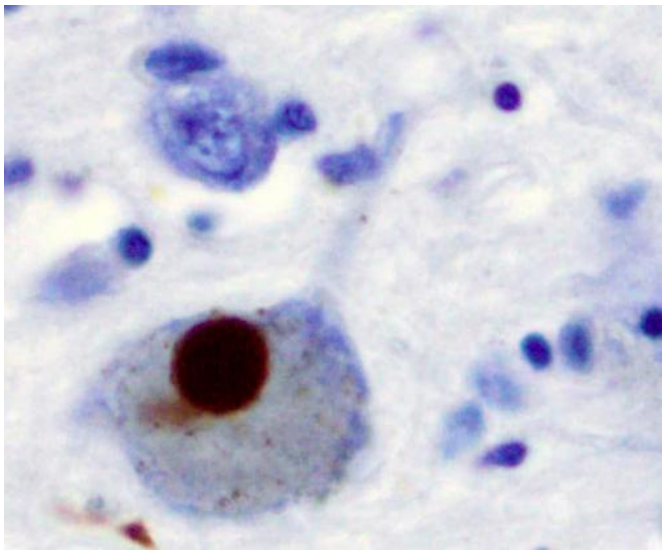

Immunohistochemistry for alpha-synuclein showing positive staining (brown) of an intraneural Lewy-body in the Substantia nigra in Parkinson's disease. Credit: Wikipedia

Researchers from Emory's Rollins School of Public Health discovered that an increase in the protein that helps store dopamine, a critical brain chemical, led to enhanced dopamine neurotransmission and protection from a Parkinson's disease-related neurotoxin in mice.

Dopamine and related neurotransmitters are stored in small storage packages called vesicles by the vesicular monoamine transporter (VMAT2). When released from these packages dopamine can help regulate movement, pleasure, and emotional response. Low dopamine levels are associated with neurodegenerative diseases such as Parkinson's disease and recent research has shown that VMAT2 function is impaired in people with the disease.

Lead researcher Gary W. Miller, PhD, professor and associate dean for research at the Rollins School of Public Health and his team generated transgenic mice with increased levels of VMAT2 and found it led to an increase in dopamine release . In addition, the group found improved outcomes on anxiety and depressive behaviors, increased movement, and protection from MPTP, the chemical that can cause Parkinson's disease-related damage in the brain.

The complete study is available in the June 17, 2014 edition of *Proceedings of the National Academy of Sciences* (*PNAS*).

According to Miller, "This work suggests that enhanced vesicular filling can be sustained over time and may be a viable therapeutic approach for a variety of central nervous system disorders that involve the storage and release of dopamine, serotonin, or norepinephrine."

More information: Cytochrome P450-generated metabolites derived from ?-3 fatty acids attenuate neovascularization, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1401191111

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