

Lessons from yeast: A possible cure for Parkinson's disease?

August 14 2008

Parkinson disease (PD) is a debilitating and lethal neurodegenerative disease, for which there is currently no cure. It is caused by the progressive loss of nerve cells that produce the chemical dopamine and is characterized by the accumulation of abnormal aggregates of a protein called alpha-syn in these dopaminergic nerve cells.

Several previous studies have suggested that the alpha-syn aggregates contribute to PD pathology, so it is possible that an agent that inhibits and/or, better yet, reverses alpha-syn aggregation could be eventually used as a therapy for PD.

Evidence to suggest that agents that disrupt alpha-syn aggregation might have beneficial effects in individuals with PD has now been provided by a team of researchers, at the Ecole Polytechnique Fédérale de Lausanne, Switzerland, and the University of Pennsylvania School of Medicine, Philadelphia, who studied a rat model of the disease.

In the study, it was found that a protein that yeast uses to protect itself from protein aggregation (there is no similar protein in mammals), called Hsp104, dramatically reduced both the formation of alpha-syn aggregates and the degeneration of neurons in the brain in a rat model of PD. In vitro studies showed that Hsp104 not only inhibited alpha-syn aggregate formation, but also interacted with mammalian proteins to disassemble them. The authors therefore suggest that Hsp104 should be considered as a potential strategy for the treatment of individuals with PD, after further studies on the safety of introducing Hsp104 into the

brain.

Citation: Hsp104 antagonizes alpha-synuclein aggregation and reduces dopaminergic degeneration in a rat model of Parkinson disease, *Journal of Clinical Investigation*; www.the-jci.org/article.php?id=35781

Source: Journal of Clinical Investigation

Citation: Lessons from yeast: A possible cure for Parkinson's disease? (2008, August 14)
retrieved 20 March 2024 from <https://medicalxpress.com/news/2008-08-lessons-yeast-parkinson-disease.html>

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