

Slowing Down Huntington's Disease

By Lauren Taylor

What is Huntington's Disease?

Huntington's Disease is an inherited disease that slowly causes the breakdown of the nerve cells of the brain resulting in various disorders of movement and cognition as well as some psychological conditions. Huntington's disease is caused by a defect that is inherited on a single gene.

Symptoms of Huntington's disease can develop at any time in a person's life, but typically appear when an affected individual is in their 30s or 40s. If symptoms develop before the age of 20, then this is called Juvenile Huntington's disease and symptoms and progression may be different.

Symptoms vary greatly from person to person but can include things such as involuntary jerking or writhing movements, abnormal eye movements, difficulty with speech and/or swallowing, impaired gait and balance, difficulty focusing on tasks, lack of flexibility, lack of impulse control, difficulties in learning new information, insomnia, fatigue and energy loss, social withdrawal, and more.

While there is currently no cure for Huntington's disease, there are many approved medications to help manage the symptoms associated with Huntington's disease. Some of these medications include drugs to help with movement disorders such as Xenazine and Austedo, antipsychotic drugs such as Haldol, and other mood-stabilizing and antidepressants.

Antihistamines and Huntington's Disease

Scientists studying Huntington's Disease have found that antihistamines may be incredibly useful in the treatment of the progression of Huntington's disease.

What they already know is that in Huntington's Disease, the dopamine signaling goes away and eventually leads to brain-cell death. In a study of mice with diagnosed Huntington's Disease, it was found that the mice at two- and four-months-old were both asymptomatic and have the D1 receptor (D1R)-H3R complex. When looking at mice just a bit older (6-8 months) that also have Huntington's disease, the D1R-H3R complexes were lost and the mice were now symptomatic with Huntington's disease.

The team of scientists tested their theory of the effect of antihistamines by using a drug called thioperamide. The mice, all of which had Huntington's disease, that were treated with the thioperamide, showed similar coordination and balance as healthy mice (falling at about the same rate). In testing memory, it was found that the mice treated with the thioperamide did

not show memory deficits, while the mice treated with just saline did show memory deficits when showed familiar objects.

The team next discovered through brain tissue samples that the treated mice still had the D1R-H3R complexes at both six and eight months, while the untreated mice did not. Further, the mice that had reached seven months of age and had not yet been treated, the thioperamide had no effect on deficits in movement, learning or memory. This further proves the theory that the D1R-H3R complexes must be present for the protective effects of the medication to work. If the D1R-H3R complexes are already absent, then the thioperamide is useless.

The team looked further at human brain tissue samples for the presence or absence of the D1R-H3R complexes and found similar findings. In early stages of the disease, the complexes are present, and in later, advanced disease, the complexes are near absent.

This research and data is a breakthrough in the fight against Huntington's disease. If caught at an early enough stage where the D1R-H3R complexes are still present, the administration of a simple antihistamine could greatly slow the progression of the disease, leading to a greater quality of life for those affected.