Dextromethorphan (DMP) as a Treatment for Neurodegenerative Disorders

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Technology description

Summary

Method for treatment of amyotrophic lateral sclerosis via administration of DMP

Description

This technology relates to a method for treatment of Amyotrophic Lateral Sclerosis (ALS) and other neurodegenerative disorders.

Amyotrophic Lateral Sclerosis (ALS) is a progressive degenerative disease of the motor system which is usually relentlessly progressive, leading to death in half the cases within three years of onset. It is related to a group of diverse motor-system diseases which include Huntington's Chorea, Parkinson's disease and Alzheimer's disease. Numerous agents have been tried therapeutically in ALS, but none have been unequivocally demonstrated to benefit the disorder.

ALS was once exceedingly common on the Marianas islands of Guam and Rota. The rates on these islands were as much as 100 times those for the United States. However, with Americanization of the population after World Was II, the incidence of ALS on these islands began to dramatically decline. This decline has been linked to the exclusion of the highly toxic seed of the false sago palm from the diet of the natives. It has subsequently been shown that an unusual nonprotein amino acid, beta-N-Methylamino-L-alanine or L-BMAA, present in the seed of the false sago plant, can produce an ALS-like motor disorder when fed to monkeys.

This suggested to us that the L-BMAA might be affecting a neuroreceptor type responsible for the ALS symptoms. It is known that other excitatory amino acids can bind in vitro to neuronal receptors. It has further been demonstrated in recent years that the dextrorotary opioid derivative dextromethorphan (DMP) binds to excitatory amino acid receptors in the brain. DMP has long been known as a highly effective cough suppressant. We, therefore, theorized that since a neuro-excitatory receptor in the brain appears to be adversely affected by L-BMAA and may produce the motor degeneration characteristic of ALS, the action of L-BMAA with the involved receptors might be antagonized by an agent such as DMP that suppresses central synaptic transmission.

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