

# Combined Therapy for the Treatment of Parkinson's Disease.

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## Technology description

Parkinson's disease treatments available are symptomatic. Levodopa, (L-3,4-dihydroxyphenylalanine), a dopamine precursor, is one of the most effective medication for controlling motor impairment of Parkinson's disease patients. Unfortunately after years of treatment as the disease progresses increasing doses are required and patient develop side-effects. DHEA and DHEA-sulfate at doses presently used as dietary supplement are shown in animal models of Parkinson' s disease to potentiate the effect of levodopa. Hence, combining DHEA and/or DHEA-S to dopamine precursors could allow a reduction of the dopaminergic drug while maintaining the antiparkinsonian efficacy without the side-effects.

## Description

Parkinson's disease is the second most common neurodegenerative disease after Alzheimer. It is attributable to a loss of dopamine. No cure for Parkinson's disease is known. Treatments available are symptomatic. Levodopa is one of the most effective medication for controlling motor impairment of Parkinson's disease patients. However, as the loss of dopamine-producing nerve cells continues, symptoms continue to worsen and consequently, the dose of levodopa has to be increased. This may eventually lead to the development of side effects which in many cases are so important that it becomes impossible to increase the dose of levodopa any higher. DHEA and DHEA-S are sex steroid precursors of both estradiol and testosterone; these steroid precursors have been shown to be synthesized in the brain. Accumulating evidence in humans supports a modulatory role of these steroids in the brain. We propose administration to patients dehydroepiandrosterone and/or dehydroepiandrosterone-sulfate with a dopamine precursor. The dose of the dopamine precursor will be reduced and the antiparkinsonian efficacy maintained with the addition of DHEA.

## Market

In the United States, it is estimated that 60,000 new cases are diagnosed each year, joining the 1.5 million Americans who currently have Parkinson disease. While the condition usually develops after the age of 65, 15% of those diagnosed are under 50.

## Application area

Dehydroepiandrosterone (DHEA) and its sulfate derivative (DHEA-S) could be combined to a lower dose of dopamine precursor or a dopamine agonist to alleviate the motor symptoms in Parkinson' s disease. Reducing the dose of the dopamine precursor would decrease, prevent or delay the development of its associated motor complications and potentiate the antiparkinsonian effect.

## Advantages

- DHEA potentiates levodopa-induced locomotor activity in a MPTP-monkey model of Parkinson' s disease.
- The effective doses of DHEA are in the range used safely in humans.
- Adding DHEA to levodopa therapy could enable the reduction of the dose of levodopa and hence protect against the side effects associated with this drugs, which are dose-related.

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