Researchers at the University of South Florida have developed a novel method for the treatment of Parkinson’s Disease and other disorders using hexachlorophene.

Worldwide, Parkinson’s Disease (PD) is the second most common neurodegenerative disease and affects more than 5 million people. It is distinguished by the loss of dopaminergic neurons and is characterized by four major symptoms: tremor, bradykinesia, rigidity and postural instability. In addition to environmental factors, mutations in six loci (LRRK2, SNCA, DJ1, PRKN, PINK 1 and ATP13A2) have been shown to be causative of familial PD. Among them, SNCA and LRRK2 mutations trigger autosomal dominant forms of PD.

To date, the LRRK2 protein has been reported as one of the most frequently mutated PD genes and is one of the causative agents for the pathogenesis of PD and Crohn's disease. Currently, limited options exist for the treatment of these diseases. Therefore, there is a great need to discover and develop therapeutic agents that can target LRRK2.

USF researchers showed that in different cell models that had overexpressed wild-type, mutant, or endogenous LRRK2 protein, treatment with hexachlorophene reduced the total level of LRRK2 in these cells. For that reason, hexachlorophene has the potential to serve as a treatment option for PD. This novel method is not limited to treatment of only neurodegenerative disorders, and may be able to treat other diseases also impacted by the LRRK2 gene such as Crohn’s disease, leprosy, rheumatoid arthritis, psoriasis and various forms of cancer.

**ADVANTAGES:**

- Reduction in LRRK2 protein levels
- Applicable to other diseases resulting from mutations in the LRRK2 gene

**Therapeutic Agent for Parkinson’s Disease and Other Diseases**

**Treatment of Cells Expressing Endogenous LRRK2 with Hexachlorophene (Labeled as B10) Reduced the Expression of LRRK2 when Compared to a Control (Ctr)**