

## Q&A with Eboo Versi, MD PhD, Founder and Chairman of Dina Pharmaceuticals, Inc. developing a New Approach to treating Parkinson's Disease with a Small Molecule DAMA Compound Targeting the Enkephalin Receptor that shows promise in treating the very debilitating Levodopa-Induced Dyskinesia Side Effect and works as a Stand-Alone Therapy



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**Interview conducted by:**  
**Lynn Fosse, Senior Editor, CEOCFO Magazine**

**CEOCFO: Dr. Versi, what is the vision behind Dina Pharmaceuticals?**

**Dr. Versi:** We want to provide a novel therapeutic for patients with Parkinson's disease. We are targeting the worst aspect of the disease, that is people who cannot tolerate levodopa and so are looking to have expensive and potentially dangerous deep brain surgery.

**CEOCFO: What is your approach?**

**Dr. Versi:** We have a novel new chemical entity small molecule drug that has a dual DAMA action. DAMA stands for **Delta Agonism, Mu Antagonism**. All of the therapies that are currently available for Parkinson's disease relate to the dopamine axis including levodopa which is the precursor of dopamine. We know that Parkinson's disease is due to degeneration of the dopamine containing neurons in the substantia nigra but by the time a patient presents with symptoms, they have lost half of those nerve cells. Therefore, the Gold Standard treatment is to treat with levodopa and that works fabulously. However, the problem is that after 3 to 4 years, its utility diminishes, and serious side effects develop such as dyskinesia. Parkinson's patients tell me they feel that at times, dyskinesia is worse than the actual disease. This levodopa-induced dyskinesia (LID) is characterized by involuntary, non-rhythmic, purposeless, and unpredictable movements which are severely disabling, make patients miserable and LID significantly increase treatment costs. Other therapeutic approaches either alter the way it is given, or use a drug that is very similar to the way levodopa works (dopamine agonist). All these approaches target the so-called "direct pathway" or nigrostriatal pathway. Our approach is different.

**CEOCFO: Would you explain how this works?**

**Dr. Versi:** Downstream from the dopamine pathway is the secondary or indirect pathway that send signals from the striatum to the globus pallidus in the basal ganglia of the brain. The neurotransmitter that is responsible for this is a peptide called enkephalin and this is important in Parkinson's disease as the body tries to compensate by up-regulating this secondary pathway. Dina Pharma is targeting this indirect pathway by developing a small molecule DAMA compound called DPI-289. This drug could be used on its own, or in combination with levodopa, to achieve an even more potent and lasting effect.

**CEOCFO: What does your drug do in the body?**

**Dr. Versi:** DPI-289 augments the indirect pathway by acting on the delta receptor that is the enkephalin receptor, thus allowing the patient to be able to move normally. The drug also acts against the mu receptor which prevents the onset of LID and it may even reduce LID.