PURDUE INNOVATES | Office of Technology Commercialization

Tetrahydro-6H-5-oxa-7-azabenzo(c)phenanthrenes as dopamine agonists

Novel compounds that fully and selectively activate the dopamine D1 receptor offer a highly potent, orally bioavailable treatment for advanced Parkinson's disease and other central nervous system disorders.

Dopamine is a neurotransmitter in the central nervous system that has been implicated in numerous neurological disorders. For example, excess stimulation of dopamine may be linked to schizophrenia, whereas either excessive or insufficient functional dopaminergic activity may cause hypertension, narcolepsy, and other disorders including Parkinson's disease. The D1 receptor is a dopamine receptor subtype that may be a viable therapeutic target for dopamine-related pathologies. Accordingly, researchers have directed their efforts to design ligands that are selective D1 receptor agonists.

Researchers at Purdue University have developed new molecules that fully and selectively activate the dopamine D1 receptor. The compounds derived are useful for treating patients having a dopamine-related dysfunction of the central nervous system (CNS) as well as conditions in which peripheral dopamine receptors are involved. They are expected to be effective against Parkinson's disease, improving cognition, memory, attention deficit hyperactivity disorder, and related developmental disorders.

Advantages:

-Lead compound is 50 times more selective for D1 receptors than for D2L receptors

-Equipotent, but more selective than other D1 agonists

-Potentially effective treatment for advanced Parkinson's disease and other CNS disorders

-Orally bioavailable in animal models

Technology ID

64153

Category

Pharmaceuticals/Drug Discovery & Development

Authors

David Nichols

Val Joseph Watts

Further information

Clayton Houck

CJHouck@prf.org

View online

Potential Applications:

-Medical/Healthcare

-Pharmaceutical industry

-Drug development

TRL: 3

Intellectual Property:

Provisional-Patent, 2006-02-21, United States | PCT-Patent, 2007-02-21, WO | NATL-Patent, 2007-02-21, European Patent | NATL-Patent, 2007-02-21, Canada | NATL-Patent, 2007-02-21, Australia | NATL-Patent, 2007-02-21, New Zealand | Utility Patent, 2008-08-20, United States

Keywords: Dopamine D1 receptor agonist, D1 selective ligands, CNS dysfunction treatment, Parkinson's disease treatment, cognition improvement, memory improvement, ADHD treatment, orally bioavailable drug, pharmaceutical drug development, dopamine-related pathologies, Central Nervous System, Chemical and Chemical Analysis, Chemistry and Chemical Analysis, Compounds, Dopamine, Drug Development, Drug Discovery, Medicinal Chemistry, Parkinson's Disease, Pharmaceuticals