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Chromeno[4,3,2-de]isoquinolines as Potent Dopamine Receptor Ligands

A novel compound with unique dual affinity for D1 and D2 dopamine receptors offers new therapeutic strategies for treating cognitive disorders, hypertension, schizophrenia, and addiction.

According to the Parkinson's Disease Foundation, as many as one million people in the U.S. have Parkinson's disease, with approximately 60,000 new diagnoses annually. Worldwide, there are an estimated 7 to 10 million people living with this disease. Reduced dopamine transmission is known to be a cause of Parkinson's disease. While a dopamine precursor, levodopa, can be used to alleviate dopamine depletion, it has a very short pharmacokinetic life and increased doses are required over time to achieve desired therapeutic results. Dopamine agonist drugs have been used to activate post synaptic dopamine receptors and allow the available dopamine in the brain to bind efficiently to these receptors. These agonists can be used in monotherapy applications or in conjunction with the standard levodopa therapy.

A compound developed by Purdue University researchers, dinoxyline(8,9-dihydroxy-1,2,3,11b-

tetragydrichromeno[4,3,2-de]isoquinoline), provides a novel class of therapeutic agents for any disorder that can be treated by drugs affecting dopamine receptors. Where dihydrexidine is ten-fold D1:D2 selective and dinapsoline is five-fold D1:D2 selective, dinoxyline has an equally high affinity for both D1 and D2 receptors. This is surprising considering the structure of this new compound in comparison to related work with other dopamine agonists. The unexpected result suggests that dinoxyline may bind to the D2 receptor in another way, which could translate into unanticipated therapeutic benefits.

Advantages:

-Useful in treating certain cognitive disorders and dementia

-Potent anti-hypertensive effects

Technology ID

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Category

Pharmaceuticals/Drug Discovery & Development

Authors

Russell Grubbs

Richard Mailman

David Nichols

Further information

Clayton Houck

CJHouck@prf.org

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-Provides novel strategies to treat schizophrenia and drug addiction

Potential Applications:

-Pharmaceutical industry

TRL: 2

Intellectual Property:

Provisional-Patent, 1999-06-21, United States | RE, 2000-06-20, Denmark | RE, 2000-06-20, Germany | RE, 2000-06-20, Switzerland | RE, 2000-06-20, Cyprus | RE, 2000-06-20, Belgium | RE, 2000-06-20, Austria | RE, 2000-06-20, Ireland | RE, 2000-06-20, Spain | RE, 2000-06-20, United Kingdom | RE, 2000-06-20, France | RE, 2000-06-20, Finland | RE, 2000-06-20, Greece | NATL-Patent, 2000-06-20, Canada | PCT-Patent, 2000-06-20, WO | NATL-Patent, 2000-06-20, Brazil | NATL-Patent, 2000-06-20, Mexico | NATL-Patent, 2000-06-20, Republic of Korea | NATL-Patent, 2000-06-20, Australia | NATL-Patent, 2000-06-20, Japan | NATL-Patent, 2000-06-20, European Patent | NATL-Patent, 2000-06-20, New Zealand | NATL-Patent, 2000-06-20, Norway | RE, 2000-06-20, Monaco | RE, 2000-06-20, Netherlands | RE, 2000-06-20, Portugal | Patent

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