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

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Technology description

Background

Reduced dopamine transmission is known to be a cause of Parkinson's disease. In the United States alone, 500,000 people suffer from this disease, with approximately 50,000 cases diagnosed each year. 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.

Technology Summary

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.

Application area

Pharmaceutical Industry

Advantages

Useful in treating certain cognitive disorders and dementia
Potent anti-hypertensive effects
Provides novel strategies to treat schizophrenia and drug addiction

Institution

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