UNIVERSITY OF MINNESOTA
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Novel compounds for treatment of neurodegenerative disease and chronic pain

Novel alpha2-adrenergic agonists with neuroprotective and/or analgesic properties.

IP Status: US Patent Issued; Patent No.12,006,294

Applications

- Neurodegenerative disease treatment
- Chronic pain treatment

Key Benefits & Differentiators

- **Neuroprotective properties:** These analogs can potentially slow the progression of neurodegenerative diseases such as Parkinson's, Alzheimer's, and Huntington's disease.
- **Analgesic properties:** These analogs can potentially provide a non-opioid alternative for managing chronic pain.
- **Reduced side effects:** These analogs lack affinity for adrenoreceptors, resulting in fewer side effects compared to their parent compound.
- **Synergy with morphine:** The observed synergy between these analogs themselves and with morphine suggest the potential to achieve effective pain relief with lower opioid dosages.

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Technology Overview

As human lifespans continue to extend, the prevalence of diseases linked to the accumulation of misfolded proteins, such as Parkinson’s, Alzheimer’s, and Huntington’s disease, continue to increase. This trend is particularly evident among individuals aged 65 and older in the United

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Category
All Technologies
Life Sciences/Biochemicals & Small Molecules
Life Sciences/Human Health
Life Sciences/Neuroscience
Life Sciences/Pharmaceuticals
Life Sciences/Research Tools
Life Sciences/Therapeutics

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States, with approximately 6.7 million Americans living with Alzheimer's disease and at least 1 million diagnosed with Parkinson's Disease. Concurrently, the challenge of chronic pain persists, exacerbated by the addictive and diminishing efficacy nature of many opiate-based analgesics. Current estimates suggest that over 2 million Americans are addicted to prescription pain relievers. These reasons underscore an urgent need for innovative therapies that are both more efficacious and possess fewer adverse effects, addressing the complexity of treating neurodegenerative diseases and chronic pain.

The FDA-approved drug Guanabenz acetate (marketed as Wytensin™), originally used as an antihypertensive agent, displays neuroprotective and analgesic properties. Researchers at the University of Minnesota have developed novel Guanabenz and structurally similar analogs. These analogs effectively retain the neuroprotective and analgesic properties of the parent compound, while eliminating any sedative and respiratory side effects , thus significantly improving their therapeutic window. The introduction of these structurally-related analogs presents a promising avenue for treating neurodegenerative diseases characterized by protein aggregation, for which viable therapeutic options remain scarce. Moreover, their inherent analgesic properties position them as a potential treatment for chronic pain, devoid of the dependency issues associated with existing treatments. These analogs demonstrate a notable synergy among themselves and also with morphine, suggesting a potential strategy for reducing opioid dosages when used in tandem. Collectively, the attributes of these analogs hold the potential to address two critical health challenges both within the United States and around the globe.

Phase of Development

TRL: 3-4

In vitro and in vivo data has been collected for these analogs, which demonstrates the neuroprotective and analgesic properties.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

Researchers

- **Swati S. More, PhD** Professor, Center for Drug Design
- **Robert Vince, PhD** Director, Center for Drug Design