Riluzole Derivatives Inhibit Neuronal Activity-Regulated Glutamine Transport

Tech ID: 34791 / UC Case 2018-471-0

ABSTRACT

Researchers at Louisiana State University, New Orleans and the University of California, Davis have developed neuroprotective compounds that inhibit glutamine transport to reduce excitotoxic glutamate release, offering treatment for neurodegenerative diseases.

FULL DESCRIPTION

This technology involves the development of SKA-378 compounds (Riluzole derivatives) that inhibit activity-regulated glutamine/methylaminoisobutyric acid transport to prevent glutamate-induced neuronal death. Tested in hippocampal slice cultures and animal models, these compounds show promising neuroprotective effects against ischemic and neurodegenerative injury. They may be combined with existing therapies such as NMDA receptor blockers to enhance efficacy.

APPLICATIONS

- Treatment and prevention of neurodegenerative disorders like Alzheimer's disease.
- Therapeutic intervention following cerebral ischemia and stroke.
- Adjunct therapy in epilepsy to reduce neuronal damage.
- Development of novel neuroprotective pharmaceuticals.
- Use in combination drug regimens targeting excitotoxicity.

FEATURES/BENEFITS

- Selective inhibition of glutamine/MeAIB transport linked to excitotoxicity.
- Demonstrated neuroprotection in organotypic hippocampal cultures.
- Potentially safer with favorable pharmacokinetic and toxicity profiles.
- Compatible with combination therapies for enhanced effect.
- Multiple administration routes available.
- Prevents neuronal death driven by glutamate excitotoxicity.
- Reduces damage from ischemic injury such as oxygen–glucose deprivation.
- Slows or mitigates neurodegenerative progression including Alzheimer’s and epilepsy.
- Overcomes limitations of current neuroprotective drugs by improving selectivity and efficacy.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12661340	06/23/2026	2018-471
United States Of America	Issued Patent	11,974,988	05/07/2024	2018-471
Patent Cooperation Treaty	Published Application	2019/222393 A1	11/21/2019	2018-471

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Selective KCa3.1 Channel Activators as Novel Antihypertensives
- Selective Voltage Gated KV1.3 Potassium Channel Inhibitors
- A mixed Nav blocker and KCa2 activator, as a potent novel anticonvulsant
- Optimized Non-Addictive Biologics Targeting Sodium Channels Involved In Pain Signaling

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OTHER INFORMATION

KEYWORDS

Alzheimer’s disease, epilepsy, glutamate cycle, neuroprotection, neurodegenerative diseases

CATEGORIZED AS

- **Biotechnology**
  - Health
  - Proteomics
- **Medical**
  - Disease: Central Nervous System
  - New Chemical Entities, Drug Leads
  - Therapeutics

RELATED CASES

2018-471-0

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