

N-BRIDGED DIAZOCINE ANALOGUES OF CARBAMAZEPINE TO CONTROL NEURONAL ACTIVITY WITH LIGHT AND APPLICATIONS THEREOF

The Need

New treatment options for neurological conditions that involve excessive neuronal activity or signaling, such as epilepsy and neuropathic pain, that overcome the adverse effects of the prior art.

The Solution

Compounds useful for the inhibition of neurons only at the site of excessive neuronal activity and on demand. Photopharmacological approach to activate reversibly the action of drugs.

Innovative Aspects

New compounds that can be administered systemically and produce neither therapeutic nor adverse effects in the absence of illumination to the nervous system, whereas upon illumination they are capable of inhibiting or decreasing the frequency of action potentials generation and are therefore suitable for the treatment of neurological conditions that involve excessive neuronal activity or signaling, such as epilepsy and pain signaling in the spinal cord and brain (in particular neuropathic pain).

These compounds are light activated and, thus, the neuro-inhibitory effects are only localized at the region of illumination and on demand, decreasing the incidence of the severe adverse effects like nausea, vomiting, dizziness, somnolence, diplopia, vertigo and ataxia reported for systemic administration of present treatment .

High tolerancy, high efficacy, localized efficacy in specific regions of the nervous system, rapid acute inhibition on demand (spatial and temporal control of neuro-inhibition)

Stage of Development:

The present technology has been demonstrated in cultures of neurons and in zebrafish larvae

Intellectual Property

European patent application (Priority date: March 7, 2023)

Suitable for international extension (PCT application)

Available for:

- Licensing
- Further development

Contact details