

## Neurotoxicity and Analgesic Treatment Using Dabigatran Etexilate

Tech ID: 33409 / UC Case 2022-975-0

### BRIEF DESCRIPTION

Researchers at UC Irvine have identified and tested the FDA approved thrombin inhibitor Dabigatran etexilate for treatment of pain related conditions, seizure conditions and exogenously induced chemical neurotoxicity. Dabigatran etexilate stabilizes function of neuronal Kv7 potassium channels which are low-voltage gated potassium channels that regulate neuronal firing. Kv7 channels generate reversible high frequency firing of neurons in response to various neurotransmitters and hormones. This transient hyperactivity sensitizes neurons so that they can facilitate responses to essential information. Dabigatran etexilate stabilizes the function of Kv7 channels. As it is already FDA approved, this treatment will be well tolerated.

### SUGGESTED USES

Treatment of:

- Neuron death and damage
- Pain management
- Epilepsy

### FEATURES/BENEFITS

Novel therapy to protect neurons after exposure to neurotoxic events such as severe seizures.

Novel therapy as a non-opiate pain killer.

Non addictive drug with novel mechanism.

### FULL DESCRIPTION

Dabigatran etexilate is a thrombin inhibitor, which has been developed as a new class of anticoagulants or more commonly known as blood thinners. The inventors have discovered that this compound preserves function of the neuronal Kv7 potassium channel and prevents neuronal death after excitotoxic events. Excitotoxicity is one of the most common mechanisms of neuronal damage seen in various neurodegenerative diseases, seizure conditions and conditions involving exogenously induced chemical neurotoxicity. Therefore, the inventors propose to use Dabigatran etexilate for post-incident therapy to save neurons after exposure to harmful events, including but not limited to seizure conditions and conditions involving exogenously induced chemical neurotoxicity.

In addition, the inventors discovered that this compound also reduces inflammatory pain, especially pain that involves hyperalgesia. Therefore, the inventors propose to use Dabigatran etexilate as the first in the class painkiller, especially for hyperalgesia. Since Dabigatran etexilate has already been approved by FDA, this novel use of this drug has a great clinical impact in urgent needs. Considering the mechanism of action for reducing pain, Dabigatran etexilate can be used for patients suffering from hyperalgesia. After the opioid crisis, non-opioid analgesics to treat chronic pain are in urgent need. Because chronic pain is usually

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### INVENTORS

» Hoshi, Naoto

### OTHER INFORMATION

### CATEGORIZED AS

- » **Medical**
- » Disease: Central Nervous System
- » Therapeutics

### RELATED CASES

2022-975-0

accompanied by hyperalgesia. The proposed use of this repurposed FDA-drug has a great potential with immediate impact.

STATE OF DEVELOPMENT

In vitro and in vivo studies

PATENT STATUS

Patent Pending

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