Optimized Non-Addictive Biologics Targeting Sodium Channels Involved In Pain Signaling

Tech ID: 32995 / UC Case 2022-516-0

ABSTRACT

Researchers at the University of California, Davis have developed high potency and selective peptide inhibitors that act as a non-addictive analgesic for relief of chronic and/or severe pain in humans.

FULL DESCRIPTION

Local anesthetics that inhibit Nav channels, sodium-voltage gated channels, are commonly used in pain management. Pain signals primarily originate in a subset of peripheral neurons that harbor a distinct subset of these Nav channels. Genetic studies have identified the key subsets of Nav channels involved in pain signaling. These subsets of Nav channels includes the channel Nav1.7. Current use of Nav channel blockers as an anesthetic is wide-spread due to their non-addictive properties and ability to inhibit Nav channels in peripheral sensory neurons. Unfortunately, current anesthetics are non-selective and block Nav channels vital for the function of the heart, muscle, and central nervous system.

Researchers at the University of California, Davis have established highly potent and moderately selective peptides that inhibits human Nav1.7 activation. Through optimizing the selectivity, potency, and stability of ProTx-II based peptides, researchers have developed a non-additive alternative to opioid analgesics for relief of chronic and/or severe pain in humans. These novel peptides are active against neuropathic pain in human sensory neurons and are stable in artificial cerebrospinal. When administered intrathecally the peptides are also effective againstchronic pain.

APPLICATIONS

- Relief of chronic and/or severe pain in humans

FEATURES/BENEFITS

- Optimization of wild-type ProTx-II peptide selectivity and potency
- Non-addictive alternative to opioid analgesic

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2024/011119	01/11/2024	2022-516

Additional Patent Pending

RELATED MATERIALS

CONTACT

Raj Gururajan
rgururajan@ucdavis.edu
tel: 530-754-7637.

INVENTORS

- Hammock, Bruce D.
- Wagner, Karen M.
- Wulff, Heike
- Yarov-Yarovoy, Vladimir

OTHER INFORMATION

KEYWORDS

homologous peptides, peptide variants, chronic pain, pain management, non-addictive

CATEGORIZED AS

- **Medical**
  - New Chemical Entities, Drug Leads
  - Other

RELATED CASES

2022-516-0

- Computational design of peptides to target NaV1.7 channel with high potency and selectivity for the treatment of pain - 07/22/2022

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Method of Preventing Bone Loss and Periodontal Disease
- Multi-Target Inhibitors for Pain Treatment
- Improved Dioxin Detection and Measurement
- Detection System for Small Molecules
- Selective KCa3.1 Channel Activators as Novel Antihypertensives
- Small Molecule sEH Inhibitors to Treat Alpha-Synuclein Neurodegenerative Disorders
- Soluble Epoxide Hydrolase-Conditioned Stem Cells for Cardiac Cell-Based Therapy
- Beneficial Effects of Novel Inhibitors of Soluble Epoxide Hydrolase as Adjuvant Treatment for Cardiac Cell-Based Therapy
- Antibodies: Bacillus Delta Endotoxin PAbs
- Antibodies: Bromacil Herbicide PAbs
- Novel Neuropathy Treatment Using Soluble Epoxide Inhibitors
- Selective Voltage Gated KV1.3 Potassium Channel Inhibitors
- Novel and Specific Inhibitors of p21
- Antibodies for Pseudomonas (P.) aeruginosa
- Antibodies: Urea Herbicide Pabs
- Bioavailable Dual sEH/PDE4 Inhibitor for Inflammatory Pain
- Chemical Synthesis of Lipid Mediator 22-HDoHE and Structural Analogs
- A mixed Nav blocker and KCa2 activator, as a potent novel anticonvulsant
- Antibodies: Triazine Herbicide Pabs
- Soluble Epoxide Hydrolase Inhibitors For The Treatment Of Arrhythmogenic Cardiomyopathy And Related Diseases
- A New Pharmaceutical Therapy Target for Depression and Other Central Nervous System Diseases

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel:
530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax:
530.754.7620

© 2022, The Regents of the University of California
Terms of use
Privacy Notice