Multi-Target Inhibitors for Pain Treatment

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ABSTRACT

Researchers at the University of California, Davis have developed compounds that concurrently inhibit Soluble Epoxide Hydrolase (sEH) and Fatty Acid Amide Hydrolase (FAAH as therapeutics for treating pain. sEH and FAAH inhibition have been independently developed as pharmaceutical targets for treating inflammatory and neuropathic pain but concurrent inhibition of these two targets is synergistic and combining of both targets into a single therapeutic approach may provide better pain relief for patients.

FULL DESCRIPTION

Soluble epoxide hydrolase (sEH) and fatty acid amide hydrolase (FAAH) regulate inflammation, pain and other biological processes relevant to human health. Their biological activities are mediated by their substrates epoxyeicosatrienoic acid (EET) and arachidonoyl ethanolamide (AEA), respectively, and are essential components of eicosanoid and endocannabinoid signaling, respectively. These signaling pathways are known to modulate a number of disease states, including chronic pain, hypertension and cancer, and thus, these two enzymes are promising clinical targets.

Despite substantial promising pre-clinical data for both sEH and FAAH inhibitors, none of the clinical trials to date have demonstrated efficacy for either target. One approach to overcoming this obstacle is to target two or more parallel pathways involved in the same disease. To harness this synergy while simplifying pharmacokinetics, researchers at the University of California, Davis have developed dual inhibitors that concurrently inhibit these two targets. These dual inhibitors may be applied as powerful therapeutics and are useful experimental tools for identifying other indications where sEH/FAAH synergy may be used therapeutically.

APPLICATIONS

- Pharmaceutical treatment for pain
- Research tool

FEATURES/BENEFITS

- Targeting two enzymes with a single chemical structure

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,858,338	12/08/2020	2016-505
United States Of America	Published Application	2021/015560	05/27/2021	2016-505

INVENTORS

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OTHER INFORMATION

KEYWORDS

pain, soluble epoxide

hydrolase, inflammation

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Disease: Central Nervous System
- **Research Tools**
  - Other

RELATED CASES

2016-505-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Method of Preventing Bone Loss and Periodontal Disease
- Improved Dioxin Detection and Measurement
- Detection System for Small Molecules
- 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
- 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
- Antibodies: Triazine Herbicide Pabs
- Optimized Non-Addictive Biologics Targeting Sodium Channels Involved In Pain Signaling
- 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

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