Soluble Epoxide Hydrolase-Conditioned Stem Cells for Cardiac Cell-Based Therapy

Tech ID: 29082 / UC Case 2017-958-0

ABSTRACT

Researchers at the University of California, Davis, have adapted novel soluble epoxide hydrolase (sEHI) inhibitors as adjuvant treatment in cardiac cell-based therapy to improve the survival and engraftment of stem cells by pre-conditioning with the sEHI *in vitro*.

FULL DESCRIPTION

Cardiovascular disease is the leading cause of death for both men and women in the United States. Once cardiac failure has developed, the condition cannot be reversed. In current medical practice, only symptomatic treatment is available to ameliorate the symptoms. Existing cell-based cardiac therapies are being extensively investigated to potentially treat heart failure, as it could replace procedures like cardiac transplantation that are only available as definitive therapy.

Researchers at the University of California, Davis, have discovered that the survival and engraftment of stem cells (e.g. in cardiac tissue) can be increased by first exposing the stem cells to an inhibitor of soluble epoxide hydrolase *in vitro*. By using the novel soluble epoxide hydrolase (sEHI) inhibitors as adjuvant treatment in cell-based cardiac therapies, they successfully conditioned stem cells *in vitro*, which then resulted in significantly reduced oxidative stress causing lowered stem cell apoptosis. The survival of these stem cells is then improved when transplanted into the tissue of a subject. This method is also useful in treating cardiomyopathy or cardiac arrhythmia, as it can either reverse, mitigate, and/or improve the symptoms associated with these conditions.

APPLICATIONS

- Cardiovascular disease
- Heart failure
- Cardiomyopathy and cardiac arrhythmia

FEATURES/BENEFITS

- Condition stem cells *in vitro*
- Reduces oxidative stress
- Lowers stem cell apoptosis
- Improved survival and integration of stem cells in cardiac tissue
- Treatment of cardiomyopathy
- Treatment of cardiac arrhythmia

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,723,929	08/15/2023	2017-958

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OTHER INFORMATION

KEYWORDS

cardiac cell-based therapy, cardiac failure, drug therapy, heart, epoxide hydrolase-inhibitors, heart attack, stem cells, in vitro, cardiovascular disease

CATEGORIZED AS

- **Medical**
  - Disease: Cardiovascular and Circulatory System
  - New Chemical Entities, Drug Leads
  - Stem Cell
  - Therapeutics

RELATED CASES

2017-958-0

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
- Small Molecule sEH Inhibitors to Treat Alpha-Synuclein Neurodegenerative Disorders
- 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
- Engineered Biomaterial to Prevent Endothelial Inflammation
- 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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