A Small Molecule Alpha-1-Adrenergic Receptor Agonist For Treating and Preventing Heart Muscle Diseases

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CONTACT

Darya (Dasha) Bubman

Darya.Bubman@ucsf.edu

tel: 415-237-1585.

OTHER INFORMATION

KEYWORDS

alpha-1-adrenergic receptor agonist, A61603, small molecule, cancer, cardiotoxicity, cardiomyopathy, heart failure

CATEGORIZED AS

- **Medical**
  - Disease: Cardiovascular and Circulatory System
  - Therapeutics

RELATED CASES

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BACKGROUND

Anthracyclines are the most commonly prescribed chemotherapeutic agent for their effectiveness in treating cancer. However use of anthracyclines can have the severe, adverse effect of cardiac toxicity leading to cardiomyopathy and clinical heart failure. Currently available medications to counteract anthracycline-induced cardiotoxicity either do so at the cost of anti-tumor activity, or there is insufficient clinical trial data to support their efficacy in preventing cardiotoxicity. Thus widespread use of these compounds is limited.

There is a clinical need for a pharmaceutical compound that can prevent and/or treat the cardiac side effects of anthracyclines while maintaining their anti-tumor activity.

TECHNOLOGY DESCRIPTION

Researchers at UCSF have found that optimal dosing of an established and specific alpha-1-adrenergic receptor agonist, known as A61603, results in cardioprotective properties in an in vivo mouse model of anthracycline-induced cardiotoxicity, using the most common anthracycline, doxorubicin. Administration of A61603 led to increased survival and improved indices of cardiac damage. The low dose of A61603 was able to provide a beneficial reduction in cardiotoxicity without increasing blood pressure.

Furthermore, targeting of the alpha-1-adrenergic receptor in cardiotoxicity is validated by studies of cardiac myocytes in vitro, and by preliminary data in other mouse in vivo heart disease models.

For more detailed information, please refer to U.S. Patent Application No. 12/610,720.

The investigators are currently also studying beneficial uses of A61603 in other disease indications.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,364,462	06/14/2016	2012-207
United States Of America	Issued Patent	8,324,178	12/04/2012	2012-207

ADVANTAGES AND SUGGESTED USES

- Lead compound candidate for treating anthracycline-induced cardiotoxicity.
- Cardioprotective without increasing blood pressure and no predicted anti-tumor side effects.
- A61603 is highly selective for the alpha-1-adrenergic receptor.
- A61603 is not currently marketed for any indication.

ADDRESS

UCSF

Innovation Ventures

600 16th St, Genentech Hall, S-272,

CONTACT

Tel:

innovation@ucsf.edu

https://innovation.ucsf.edu

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