USE OF INHIBITORS AND MODULATORS OF VASCULAR CONTRACTILITY PATHWAYS FOR THE TREATMENT OF THORACIC AORTIC ANEURYSM

A research group from CSIC and CIBER has discovered a new mechanism linked to thoracic aortic aneurysm and dissection progression that enables the development of new therapeutic agents.

The Need

Thoracic aortic aneurysm and dissection (TAAD), including syndromic forms such as Marfan Syndrome, are life-threatening conditions with limited therapeutic options. Current clinical management is largely based on imaging surveillance, lifestyle modifications, and pharmacological treatments that only delay disease progression.

Consequently, there is a clear unmet need for novel pharmacological strategies to treat TAAD, particularly those grounded in a deeper understanding of the molecular pathways driving disease progression.

The Solution

The present invention provides a novel therapeutic approach based on the modulation of a previously unrecognized pathological mechanism involved in the regulation of aortic contractility and vascular integrity, and linked to disease progression.

By targeting key factors involved in this pathway through pharmacological inhibition, genetic modulation, or molecular interference, this method restores normal contractile behavior, prevents structural deterioration of the aortic wall, and reverses disease features, enabling the development of new therapeutic agents that modify disease progression.

Innovative Aspects

- Discovery of a new mechanism: Identification of a novel extracellular matrix–driven signaling pathway as a central regulator of aortic contractility and disease progression in TAAD.
- New therapeutic approach: Shifts the treatment approach from symptomatic management to targeting underlying molecular drivers of vascular dysfunction.
- Enabling of multiple therapeutic options: Uncovers several key targets within the pathway, enabling diverse therapeutic strategies and allowing the combination with other already existing therapeutic approaches.
- Disease-modifying potential: Demonstrates the ability not only to prevent disease progression but also to reverse established pathological features in preclinical models.
- Broad applicability: Potential use beyond syndromic TAAD, including other vascular diseases characterized by extracellular matrix remodeling and impaired contractility.
- Easy to implement: Compatible with different therapeutic modalities, facilitating clinical development.

Stage of Development:
Validated in preclinical models.

Intellectual Property:

- Priority patent application filed.

Aims

Looking for a partner interested in a license and/or a collaboration agreement to develop and exploit this asset.

Contact details

Consorcio Centro de Investigación Biomédica en Red *(CIBER)*
otc@ciberisciii.es
https://www.ciberisciii.es/en