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Drug Inhibition of NLRP3 Inflammasome Activation

Tech ID: 33758 / UC Case 2024-928-0

BRIEF DESCRIPTION

This technology provides a novel insight into the NLRP3 inflammasome's role in the immune response and introduces a repurposed drug that inhibits its activation.

FULL DESCRIPTION

The NLRP3 inflammasome is crucial for the innate immune response, activated by a wide range of agents. This technology explores how NLRP3 interacts with mitochondrial DNA (mtDNA), revealing that it binds non-oxidized and oxidized mtDNA with different affinities. A significant discovery is the repurposing of a drug targeting human glycosylase to inhibit NLRP3 inflammasome activation, offering a new therapeutic approach for diseases involving the inflammasome.

SUGGESTED USES

- » Pharmaceuticals for treating chronic inflammatory diseases like gout, type 2 diabetes, and atherosclerosis.
- » Therapeutic interventions for rare genetic disorders associated with NLRP3 mutations.
- » Anti-inflammatory drugs with reduced side effects for a broad patient demographic.
- » Research tools for studying the innate immune response and inflammation.

ADVANTAGES

- » Directly targets the molecular mechanism of NLRP3 inflammasome activation.
- » Offers a new therapeutic strategy for treating a wide range of inflammatory diseases.
- » Potentially reduces side effects associated with current anti-inflammatory treatments.
- » Based on detailed molecular understanding, increasing the specificity of the treatment.
- » Provides insights into the role of oxidized mtDNA in immune response activation.

PATENT STATUS

Patent Pending

RELATED MATERIALS

- » Cabral, A., Cabral, J.E., Wang, A. et al. Differential Binding of NLRP3 to non-oxidized and Ox-mtDNA mediates NLRP3 Inflammasome Activation. *Commun Biol* 6, 578 (2023).

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
 - » Disease: Autoimmune and Inflammation
 - » Therapeutics

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