MEDICAL COLLEGE OF WISCONSIN
Office of TECHNOLOGY DEVELOPMENT
Patents to Patients®

Mitochondria specific, redox-active compounds for treating Cancer

MCW 2049

Description

MCW inventors have developed a new class of mitochondria targeted oncology therapeutics. These mito-pyridinium cations have a dual mechanism of action to simultaneously induce redox cycling stress and deplete ATP. The lead compounds have been shown to be effective against both colorectal and pancreatic cancer cells *in vitro* as well as pancreatic tumors in an *in vivo* mouse model.

Problem Solved

Altered cellular bioenergetics and metabolic reprograming are hallmarks of cancer cells. Due to this metabolic flexibility in cancer cells, **targeting a single energy production pathway typically is insufficient to trigger cell death, but rather triggers treatment resistance.** This novel compound class's dual targeting of bioenergetic and redox status overcomes the pitfall of single treatment to stop tumor cell proliferation and induce cell death.

Application

These mito-pyridinium compounds have the potential to be effective oncology therapeutics against colorectal cancer and pancreatic cancer among other mitochondrially active tumors.

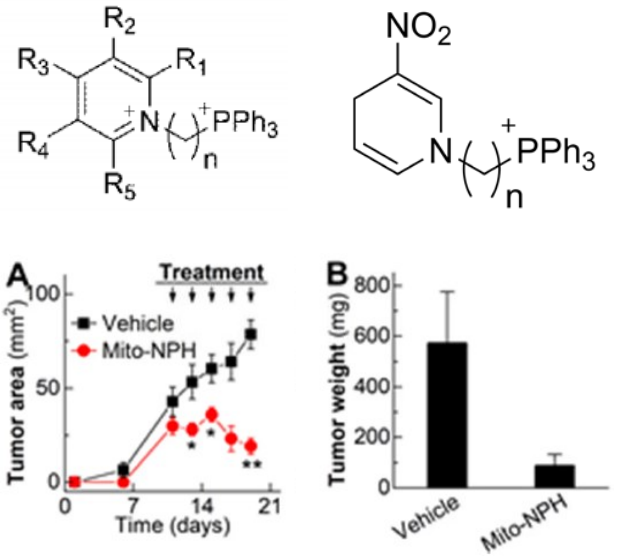

Figure: Top Left: General structure for the novel mito-pyridinium cations. Top Right: Mito-NPH. Bottom: In vivo effects of a lead compound (Mito-NPH) on FC1242 PDAC tumor growth in mice. (A) Tumor growth curves, (B) tumor wet weight after 9 days of treatment.

Key Advantages

- **Overcomes resistance via dual mechanism of action**
- **Stops tumor cell proliferation and induces cell death**
- ***In vivo* data showing tumor shrinkage over time**

Stage of Development:
In vivo mouse models

Intellectual Property Status:
US Nationalized PCT Pending
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Lead Inventors

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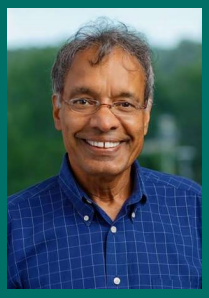

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