

Description

MCW inventors have developed novel small molecule therapeutics that will help treat pancreatic and other cancers. The new metformin analogs are selectively designed to accumulate in tumor mitochondria and inhibit OXPHOS via mitochondrial complex 1, which affords cytostatic and radiosensitization properties against tumor cells.

Problem Solved

Historically, mitochondria were thought to be dispensable in tumor cells. However, certain cancers are now known to be highly dependent on mitochondrial metabolism, making OXPHOS an emerging druggable target for cancer therapy. The “mito-metformin” compounds described here were designed with tumor-specific OXPHOS inhibition in mind and have shown efficacy towards both *in vitro* and *in vivo* pancreatic cancer models.

Application

These cytostatic compounds have significant potential as therapies in combination with cytotoxic agents and/or radiation therapy for pancreatic or other cancers.

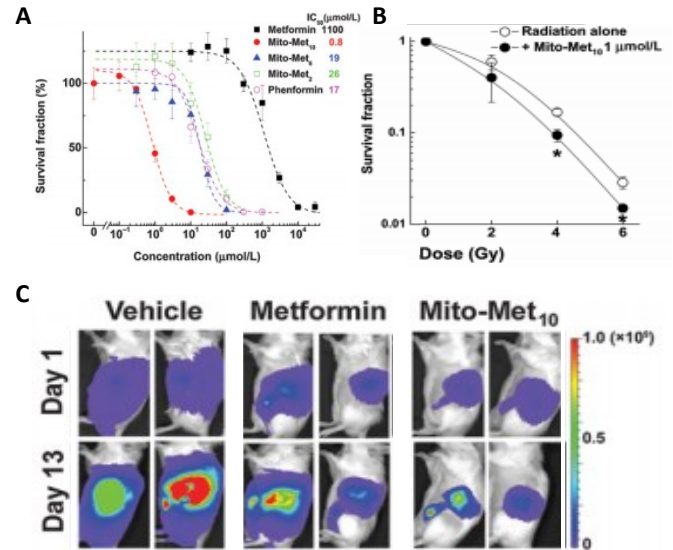


Figure: Data from [MCW 1788 publication](#). (A) MiaPaCa-2 cells were treated with metformin analogs for 24hrs. The calculated survival fraction is plotted against compound concentration and IC50 values calculated. (B) MiaPaCa-2 cells were treated with Mito-Met₁₀ for 24hrs before exposure to x-radiation. Clonogenic survival fraction was determined. (C) Pancreatic cancer xenograft mouse model was treated daily for 13 days. Representative bioluminescence images showing significantly decreased tumor growth in mice treated with Mito-Met₁₀.

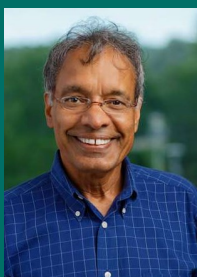
Key Advantages

- Selective to tumor cells with no toxicity to normal cells
- Nanomolar potency
- Sensitizes tumor cells to radiation treatment

Stage of Development:
In vivo animal model

Intellectual Property Status:
Issued in Europe, India
Pending in United States, China
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Lead Inventors



Balaraman Kalyanaraman, PhD
 Professor and Chair
 Department of Biophysics
 Associate Director of Basic Research,
 Center for Disease Prevention
 Research



Jacek Zielonka, PhD, DSc
 Assistant Professor
 Department of Biophysics
 Director
 Redox & Bioenergetics
 Shared Resource

Contact

Landon Olp

414-955-4884

lolp@mcw.edu