

## Metformin's Potential Role in Inhibiting Pancreatic Cancer Cell Growth

Ciara Warfvinge\*

Department of Digestive Diseases and Internal Medicine, Sant Orsola-Malpighi Hospital Bologna, Emilia-Romagna, Italy

### DESCRIPTION

Pancreatic cancer is a formidable adversary in the realm of oncology, known for its aggressive nature and limited treatment options. However, emerging research suggests a glimmer of hope in the form of an unexpected ally: Metformin, a widely prescribed medication for type 2 diabetes. Recent studies have unveiled auspicious evidence that metformin may play a pivotal role in inhibiting the growth of pancreatic cancer cells, opening up new avenues for therapeutic intervention.

### The link between diabetes and pancreatic cancer

The association between diabetes and pancreatic cancer has long intrigued researchers. Individuals with diabetes are known to have an increased risk of developing pancreatic cancer, prompting investigations into the potential relationship between the two conditions. Metformin, a first-line treatment for type 2 diabetes, has been at the center of this research due to its intriguing anti-cancer properties.

### Metformin's anticancer mechanisms

Metformin's primary mode of action in managing diabetes involves lowering blood glucose levels by improving insulin sensitivity. However, its effects extend beyond glycemic control, and recent studies have explained its anti-cancer mechanisms. Metformin is believed to act on multiple cellular pathways implicated in cancer development and progression. One key mechanism involves the activation of AMP-Activated Protein Kinase (AMPK), a cellular energy sensor. AMPK activation inhibits the mammalian Target of Rapamycin (mTOR), a central regulator of cell growth and proliferation. By disrupting the mTOR pathway, metformin effectively puts the brakes on uncontrolled cell division—a indication of cancer.

### Inhibition of tumor growth in pancreatic cancer

Several preclinical studies and retrospective analyses of diabetic patients taking metformin have provided intriguing insights into

its potential anti-cancer effects, particularly in pancreatic cancer. Research conducted on pancreatic cancer cell lines and animal models has consistently demonstrated a significant reduction in tumor growth when metformin is administered.

Metformin's impact on pancreatic cancer cells extends beyond merely inhibiting cell proliferation. Studies have also reported that metformin induces apoptosis, a process of programmed cell death, in pancreatic cancer cells. This dual action on both cell division and cell survival mechanisms makes metformin a compelling candidate for further exploration in the context of pancreatic cancer therapy.

### Clinical implications and future directions

While preclinical studies have shown potential translation of metformin's anti-cancer effects into clinical practice requires rigorous investigation. Clinical trials are underway to evaluate the safety and efficacy of metformin as an adjuvant therapy for pancreatic cancer patients, both in combination with standard treatments and as a standalone intervention. It is essential to understand the optimal dosage, treatment duration, and potential side effects of metformin when used in the context of pancreatic cancer. Additionally, identifying biomarkers that can predict a patient's response to metformin will be crucial for personalized treatment strategies.

### CONCLUSION

Metformin's journey from a diabetes management medication to a potential anti-cancer agent represents a remarkable example of drug repurposing. The emerging evidence supporting metformin's inhibitory effects on the growth of pancreatic cancer cells offers hope for a patient population desperately in need of effective treatment options. As ongoing research continues to unravel the intricacies of metformin's anti-cancer mechanisms, the prospect of integrating this widely available and well-tolerated drug into pancreatic cancer treatment regimens becomes increasingly plausible.

**Correspondence to:** Ciara Warfvinge, Department of Digestive Diseases and Internal Medicine, Sant Orsola-Malpighi Hospital Bologna, Emilia-Romagna, Italy, E-mail: Ciarawarv@uci.edu

**Received:** 16-Oct-2023, Manuscript No. PDT-23-28386; **Editor assigned:** 18-Oct-2023, PreQC No. PDT-23-28386(PQ); **Reviewed:** 02-Nov-2023, QC No. PDT-23-28386; **Revised:** 09-Nov-2023, Manuscript No. PDT-23-28386(R); **Published:** 16-Nov-2023, DOI: 10.35248/2165-7092.23.13.297.

**Citation:** Warfvinge C (2023) Metformin's Potential Role in Inhibiting Pancreatic Cancer Cell Growth. *Pancreat Disorder Ther.* 13:297.

**Copyright:** © 2023 Warfvinge C. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.