KUIC Technology Profile

Therapeutics for Pancreatic Cancer Treatment

Summary:
Currently there are no good treatment options for individuals diagnosed with pancreatic cancer. As a result, the two year survival rate after diagnosis is only 10%. Thus, novel therapeutic agents are needed that effectively treat pancreatic cancer.

The current invention is novel crocetinic analogs that have showed reduced proliferation of pancreatic cancer cells and inhibited metastasis in pancreatic cancer mouse model. These analogs carry out this function by targeting key factors that function in pancreatic cancer tumor growth. The analogs are stable and non-toxic.

Overview:
KDM3A and KDM1A are histone demethylases, which function to stimulate tumor growth in pancreatic cancer. These novel crocetinic analogs target these histone demethylases thereby reducing pancreatic cancer progression.

Application:
These novel crocetinic analogs could be developed into an effective treatment option for patients that have been diagnosed with pancreatic cancer.

How It Works:
Histone demethylases are known to stimulate tumor growth. Recent studies have shown that histone demethylases carry out this function by regulating cancer stem cells, a highly tumorigenic population of cells within a tumor that is responsible for initiation and metastasis. Through targeting these histone demethylases, these analogs inhibit the ability of cancer stem cells to initiate tumor progression and metastasis.

Benefits:
Studies of these analogs have shown that they have potent anti-mitotic effects and inhibit proliferation of pancreatic cancer stem cells. In addition, studies in a pancreatic mouse model have shown that these analogues inhibit metastasis.

Why It Is Better:
Currently there are no effective treatment options for people diagnosed with pancreatic cancer. Because they inhibit metastasis through a known mechanism of action (targeting histone demethylases) these analogs are good candidates for development as lead compounds for clinical trials. As a result, they could be developed into a viable treatment option to treat pancreatic cancer.

Other Applications:
These analogs could be developed as a treatment option for any cancer in which KDM3A and KDM1A function in tumor growth. Also, these analogues could be useful in elucidating the molecular mechanisms whereby histone demethylases stimulate tumor growth.

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