**Summary:**
This invention is a novel anti-oncolytic therapy, in combination with gemcitabine or 5-FU, to fight pancreatic cancer with high efficacy and low toxicity.

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**Applications:**
In addition to pancreatic cancer, crocetin has demonstrated anti-oncolytic activity in breast, lung, cervical, leukemia, colorectal, liver, and skin cancers. It can be used both as an adjuvant therapeutic to conventional chemotherapeutic agents and alone as a chemopreventive agent.

**Overview:**
Pancreatic cancer is a devastating disease with the lowest 5-year survival rate (<5%) of all cancers, according to the American Cancer Society. There are very few therapeutic options available. Although it accounts for only 3% of all cancers, it is the fourth leading cause of cancer-related death in the United States. Pancreatic cancer is the third most expensive cancer to treat, costing the US an estimated $3-5B each year to fight.

Saffron, a spice and a food colorant present in the dry stigmas of the plant Crocus sativus L., was used as an herbal remedy for cancer by several ancient cultures. Crocetin, an important carotenoid constituent of saffron, has been identified as the main driver of saffron’s anti-tumor activity.

An extracted form of purified crocetinic acid from saffron has demonstrated significant anti-tumor activity against pancreatic cancer cells in a mouse model with low toxicity.

**How it works:**
Research by Dr. Dhar and his collaborators indicates that crocetin inhibits DNA synthesis and RNA polymerase II activity, that in turn, inhibits proliferation by impairing EGFR, phospho Cdc-2, Cdc25c, cyclin B1 and increases apoptosis by enhancing the ratio of Bax/Bcl-2 that ultimately inhibits tumor formation. Crocetin also inhibits oxidant injury due to lipid peroxidation and these antioxidant effects could be responsible for inhibition of tumor formation.

**Patents:**
Patents pending; WO 2012/060854

**Additional Web Content:**
Contact the inventor, Animesh Dhar.