

Researchers find gene therapy that kills pancreatic cancer cells

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Researchers at the Virginia Commonwealth University Massey Cancer Center and the VCU Institute of Molecular Medicine have published findings that implicate a new chemoprevention gene therapy (CGT) for preventing and treating pancreatic cancer, one of the most lethal and treatment-resistant forms of cancer.

In the July issue of *Molecular Cancer Therapeutics*, the researchers showed that combining a dietary agent with a gene-delivered cytokine effectively eliminates human pancreatic cancer cells in mice displaying sensitivity to these highly aggressive and lethal cancer cells.

Cytokines are a category of proteins that are secreted into the circulation and can affect cancer cells at distant sites in the body, including metastases. The cytokine used in this study was melanoma differentiation associated gene-7/interleukin-24, known as mda-7/IL-24.

The dietary agent, perillyl alcohol (POH), was combined with mda-7/IL-24, which is already used in other cancer treatments. POH is found in a variety of plants, including citrus plants, and has been well-tolerated by patients who have received it in clinical studies.

The results indicated that the CGT approach not only prevented pancreatic cancer growth and progression, but it also effectively killed established tumors, thereby displaying profound chemopreventive and therapeutic activity.

Paul B. Fisher, Ph.D., was principal investigator of the study, which was supported by the National Institutes of Health and the Samuel Waxman Cancer Foundation. Fisher, who recently joined VCU from Columbia University, is professor and interim chair of VCU's department of human and molecular genetics; holds the Thelma Newmeyer Corman chair in cancer research at Massey; and is director of the VCU Institute of Molecular Medicine.

"Our hypothesis was that certain non-toxic dietary agents that had the ability to promote reactive oxygen species (ROS) would break down pancreatic cancer cell resistance to therapy following administration of mda-7/IL-24 and be safe for human use," said Fisher. "We are very excited at the prospect of this chemoprevention gene therapy as a means of both preventing and treating pancreatic cancer, and it has significant potential to move rapidly into human clinical trials."

Pancreatic cancer has a five-year survival rate of less than 5 percent, and currently there is no effective chemotherapy or radiation therapy for it. About 37,000 new cases are diagnosed in the United States each year.

Source: Virginia Commonwealth University

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