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An herbal extract inhibits the development of pancreatic cancer

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An herb recently found to kill pancreatic cancer cells also appears to inhibit development of pancreatic cancer as a result of its anti-inflammatory properties, according to researchers from the Kimmel Cancer Center at Jefferson. The data were presented at the AACR 100th Annual Meeting 2009 in Denver.

Thymoquinone, the major constituent of the oil extract from a Middle Eastern herbal seed called *Nigella sativa,* exhibited anti-inflammatory properties that reduced the release of inflammatory mediators in pancreatic cancer cells, according to Hwyda Arafat, M.D., Ph.D., associate professor of Surgery at the Jefferson Medical College of Thomas Jefferson University and a member of the Jefferson Pancreatic, Biliary & Related Cancers Center.

Nigella sativa seeds and oil are used in traditional medicine by many Middle Eastern and Asian countries. It helps treat a broad array of diseases, including some immune and inflammatory disorders, Dr. Arafat said. Previous studies have also shown it to have anti-cancer effects on prostate and colon cancers.

Based upon their previously published findings that thymoquinone inhibits histone deacetylases (HDACs), Dr. Arafat and her colleagues compared the anti-inflammatory properties of thymoquinone and trichostatin A, an HDAC inhibitor that has previously shown to ameliorate inflammation-associated cancers.

The researchers used pancreatic ductal adenocarcinoma (PDA) cells, some of which were pretreated with the cytokine TNF-alpha to induce inflammation. Thymoquinone almost completely abolished the expression of several inflammatory cytokines, including TNF-alpha, interleukin-1beta, interleukin-8, Cox-2 and MCP-1, an effect that was more superior to the effect of trichostatin A.

The herb also inhibited the activation and synthesis of NF-kappaB, a transcription factor that has been implicated in inflammation-associated cancer. Activation of NF-kappaB has been observed in pancreatic cancer and may be a factor in pancreatic cancer's resistance to chemotherapeutic agents. When animal models of pancreatic cancer were treated with thymoquinone, 67 percent of the tumors were significantly shrunken, and the levels of proinflammatory cytokines in the tumors were significantly reduced.

Inflammation has been implicated in the development of several solid tumor malignancies. Chronic pancreatitis, both hereditary and sporadic, is associated with the risk of developing pancreatic cancer.

"These are very exciting and novel results," Dr. Arafat said. "Not only patients with chronic pancreatitis could benefit from this, but also several other groups with risk of development or recurrence of pancreatic cancer, such as high-risk family members and post-surgical patients. These potent effects show promise for the herb as a potential preventive and therapeutic strategy for pancreatic cancer. More importantly, the herb and oil are safe when used moderately, and have been used for thousands of years without reported toxic effects."

Source: Thomas Jefferson University (news : web)