1: Pancreas. 2004 May;28(4):401-12.

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Pancreatic enzyme extract improves survival in murine pancreatic cancer.

Saruc M, **Standop S**, **Standop J**, **Nozawa F**, **Itami A**, **Pandey KK**, **Batra SK**, **Gonzalez NJ**, **Guesry P**, **Pour PM**.

Eppley Institute for Research in Cancer and Allied Diseases, University of Nebraska Medical Center, Omaha, Nebraska 68198-6805, USA.

OBJECTIVES: The disappointing current therapeutic approaches for pancreatic cancer (PC) represent an urgent need for the development of novel methods to control the disease. Based on a recent report on the effectiveness of pancreatic enzyme therapy, we examined the effect of porcine pancreatic enzyme extracts (PPE) on human PC xenografts in nude mice. METHODS: The malignant human PC cell line AsPC1 was transplanted into the pancreas of male beige XID nude mice that were treated or not with PPE in drinking water. The survival, size, and volume of tumors, plasma pancreatic enzyme levels, fecal fat, and urine were examined as were the expression of transforming growth factor alpha, insulinlike growth factor-I, epidermal growth factor, epidermal growth factor receptor, apoptosis, and proliferation rate of tumor cells. RESULTS: PPE-treated mice survived significantly longer than the control group ($P < 0.002$). Tumors in the PPE-treated group were significantly smaller than in the control group. All mice in the control group showed steatorrhea, hyperglucosuria, hyperbilirubinuria, and ketonuria at early stages of tumor growth, whereas only a few in the treated group showed some of these abnormalities at the final stage. There were no differences in the expression of growth factors, epidermal growth factor receptor, or the apoptotic rate between the tumors of treated and control mice. CONCLUSIONS: The treatment with PPE significantly prolongs the survival of mice with human PC xenografts and slows the tumor growth. The data indicate that the beneficial effect of PPE on survival is primarily related to the nutritional advantage of the treated mice.

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