
News Release

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American Association for Cancer Research

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News Bureau
200 First Street SW
Rochester, Minnesota 55905
<http://www.mayoclinic.org>

Contact:

Joe Dangor
507-284-5005 (days)
507-284-2511 (evenings)
Email: newsbureau@mayo.edu

Mayo Clinic: Nutritional Supplement Works Against Some Pancreatic Cancer Cells in Mice

ROCHESTER, Minn. — The dietary supplement gamma-linoleic acid can inhibit the growth of a subset of pancreatic cancer cells and selectively promote cancer cell death in mice, a Mayo Clinic study has found. The supplement, a fatty acid also known as GLA, worked particularly well when combined with the chemotherapy drug gemcitabine, the researchers say. The findings were presented today by Mayo Clinic pathologist Ruth Lupu, Ph.D., at the American Association for Cancer Research (AACR) Annual Meeting 2012. “One of the most devastating facts about pancreatic cancer is the paucity of effective drugs that exist to halt a tumor,” Dr. Lupu says. “We knew from studies done about 20 years ago that polyunsaturated fatty acids such as GLA could influence cancers in general, but we didn’t know which type of fatty acids and to what degree.”

Dr. Lupu’s team first tested GLA against a variety of pancreatic cancer cell lines, and found that it was effective only against a subtype, expressing a gene for fatty acid synthase (FASN). Earlier studies by Dr. Lupu’s team had demonstrated that FASN is highly expressed in pancreatic adenocarcinomas and appears to be a marker for poor overall survival in patients.

“This was very exciting finding, because we realized that GLA was working selectively and had a particular target within cells,” Dr. Lupu says.

As researchers tested the GLA against cells with high levels of FASN, they found GLA inhibited about 85 percent of cell growth, while gemcitabine alone, the standard chemotherapy for pancreatic cancer, had a modest effect on cell inhibition. When researchers combined GLA with gemcitabine, the cell growth was inhibited completely.

Then the team investigated the combination in mouse models of pancreatic cancer and found GLA in combination with gemcitabine significantly inhibited tumor growth.

“The two treatments worked synergistically, and we achieved a significantly higher inhibition of cell growth and higher incidence of dead pancreatic carcinoma cells,” Dr. Lupu says. “We don’t yet know why the combination works better, but we know that many drugs work better when used together.”

Dr. Lupu says that because GLA targets FASN, which is present in high levels in certain pancreatic cancers, the supplement has real potential for individualized therapy.

Dr. Lupu cautions that patients or healthy individuals should not rush to take GLA or alter their chemotherapy without consulting their oncologist. Her next stage of research will be to develop a Phase I clinical trial to test the GLA-gemcitabine combination in human patients. Her group will also test GLA in combination with other chemotherapy drugs currently used to treat pancreatic cancer.

“Since resistance to gemcitabine and other chemotherapy drugs can be an issue in treatment, we hope GLA will work in combination with other chemotherapy drugs to offer patients a wide range of treatment opportunities,” she says.

Other researchers include Cheol Hong Park, Ph.D. and Robert Busby, M.S. of Mayo Clinic, and Ingrid Espinoza, Ph.D. of the University of Mississippi Medical Center.

The study was funded by a grant from the National Institutes of Health Specialized Program of Research Excellence in pancreatic cancer.

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About Mayo Clinic Cancer Center

As a leading institution funded by the National Cancer Institute, Mayo Clinic Cancer Center conducts basic, clinical and population science research, translating discoveries into improved methods for prevention, diagnosis, prognosis and therapy.

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