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## Metformin may prevent lung cancer in smokers

WASHINGTON, D.C. — Metformin, a mainstay of treatment for patients with type 2 diabetes, may soon play a role in lung cancer prevention if early laboratory research presented here at the AACR 101st Annual Meeting 2010 is confirmed in clinical trials.

Metformin decreases levels of insulin-like growth factor-1 (IGF-1) and circulating insulin, which is important in patients with type 2 diabetes. However, emerging research suggests metformin may inhibit tumor growth as well.

"This well tolerated, FDA-approved diabetes drug was able to prevent tobacco-carcinogen induced lung tumors," said Phillip A. Dennis, M.D., Ph.D., senior investigator in the medical oncology branch of the National Cancer Institute.

For the current study, Dennis and colleagues treated mice with metformin for 13 weeks following exposure to a nicotine-derived nitrosamine (NNK), which is the most prevalent carcinogen in tobacco and a known promoter of lung tumorigenesis.

When given orally, metformin was well tolerated and reduced tumor burden by 40 percent to 50 percent. Dennis said levels of metformin reached in mice are readily achievable in humans.

Dennis and colleagues further evaluated the effects of metformin on a series of biomarkers for lung tumorigenesis and found that it inhibited mammalian target of rapamycin (mTOR), which promotes lung tumor growth, by decreasing levels of circulating insulin and IGF-1. This effect was even more profound when metformin was administered to mice by injection, which reduced lung tumor burden by 72 percent.

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The mission of the American Association for Cancer Research is to prevent and cure cancer. Founded in 1907, the AACR is the world's oldest and largest professional organization dedicated to advancing cancer research. The membership includes 31,000 basic, translational and clinical researchers; health care professionals; and cancer survivors and advocates in the United States and more than 90 other countries. The AACR marshals the full spectrum of expertise from the cancer community to accelerate progress in the prevention, diagnosis and treatment of cancer through high-quality scientific and educational programs. It funds innovative, meritorious research grants, research fellowship and career development awards. The AACR Annual Meeting attracts more than 17,000 participants who share the latest discoveries and developments in the field. Special conferences throughout the year present novel data across a wide variety of topics in cancer research, treatment and patient care. The AACR publishes six major peer-reviewed journals: *Cancer Research*; *Clinical Cancer Research*; *Molecular Cancer Therapeutics*; *Molecular Cancer Research*; *Cancer Epidemiology, Biomarkers & Prevention*; and *Cancer Prevention Research*. The AACR also publishes CR, a magazine for cancer survivors and their families, patient advocates, physicians and scientists. CR provides a forum for sharing essential, evidence-based information and perspectives on progress in cancer research, survivorship and advocacy.

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