

Metformin may prevent lung cancer in smokers

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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.

Provided by American Association for Cancer Research

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