Controlling lung cancer in mice with milk thistle extract

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(PhysOrg.com) -- Silibinin, a milk thistle extract, decreases tumor size in mice by inhibiting production of an enzyme that is overexpressed in certain types cancer, researchers at the University of Colorado Cancer Center have found.

The study will be the featured highlight in the Feb. 15 issue of *Clinical Cancer Research*, a prestigious cancer journal. Rajesh Agarwal, PhD, professor of pharmaceutical sciences at the University of Colorado School of Pharmacy and co-leader of the CU Cancer Center's cancer prevention & control program, led the study.

Agarwal's team specializes in the chemopreventive benefits of silibinin and other nutraceuticals. In this study, the team found that silibinin could reduce the size and number of lung tumors in mice by inhibiting inducible nitric oxide synthase (iNOS). This enzyme produces nitric oxide, which is a free radical that can lead to the development of lung cancer.

"In our ongoing studies, we want to understand the sources of nitric oxide generation by focusing on lung tumor microenvironment and how silibinin affects that," Agarwal says. "We are trying to reach down earlier in the cancer development to reach real chemoprevention."

Silibinin reduced tumor size by 72 percent after 12 weeks of treatment in mice with tumors that contained iNOS. In mice whose lung cancer did not express iNOS, silibinin had no effect.

"The results support targeting iNOS with silibinin for controlling lung cancer," Agarwal says.

The study also showed the benefit of using micro-CT to optimize treatment. Unlike MRI, which does not produce images clear enough to measure tumor size, micro-CT images "clearly distinguished lung tumors from surrounding tissue even without any contrast agent, and the reconstructed 3D pulmonary images easily differentiated tumors from blood vessels," according to the study.

"This is a very powerful, real-time technique to measure the effectiveness of cancer treatment in a non-invasive manner," Agarwal says.

Provided by University of Colorado Denver

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