

Natural compound found in herbs, vegetables could improve treatment of triple-negative breast cancer in women

January 23 2017, by Jeff Sossamon



Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

More than 100 women die from breast cancer every day in the United States. Triple-negative breast cancers, which comprise 15 to 20 percent of all breast tumors, are a particularly deadly type of breast disease that often metastasize to distant sites. Now, University of Missouri researchers have found that luteolin, a natural compound found in herbs such as thyme and parsley, and vegetables such as celery and broccoli, could reduce the risk of developing metastasis originating from triple-negative breast cancer in women.

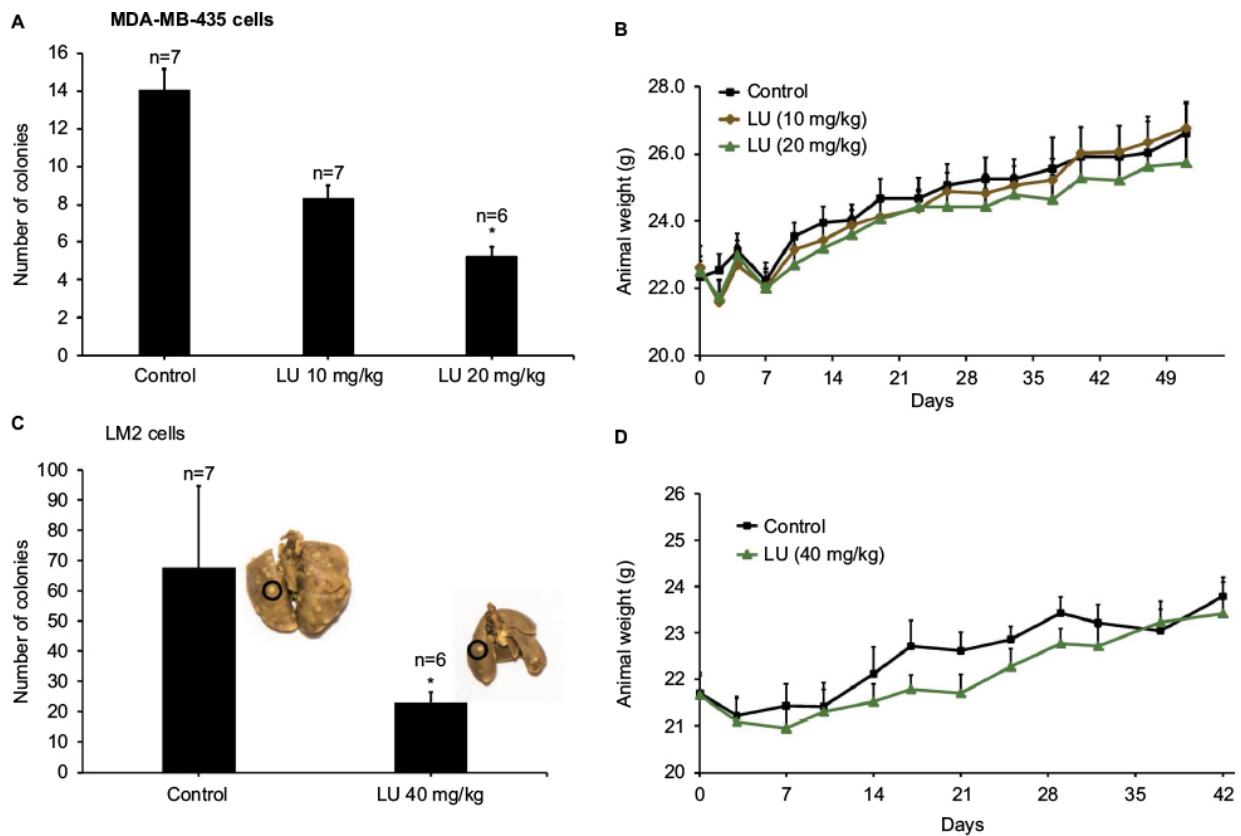
"Triple-negative breast cancers are cancer cells that lack three receptors targeted by current chemotherapy regimens. Because of this lack of receptors, common cancer drugs can't 'find' the cells, and doctors must treat the cancer with extremely aggressive and highly toxic treatment strategies," said Salman Hyder, the Zalk Endowed Professor in Tumor Angiogenesis and professor of biomedical sciences in the College of Veterinary Medicine and the Dalton Cardiovascular Research Center. "Women with this type of [breast cancer](#) also frequently develop metastatic lesions that originate from drug-resistant cells. Therefore, safer therapeutic therapies that are more effective are being sought for this deadly type of cancer in women."

Hyder and his research team have focused on luteolin, a naturally occurring, non-toxic [plant compound](#) that has been proven effective against several types of cancer. Using human [triple-negative breast cancer](#) cells grown in mice, the research team tested luteolin to determine if it could suppress metastasis. In the first series of tests, researchers found that luteolin inhibited the metastasis of triple-negative cancer in the lungs of affected mice.

"Mice exposed to human triple-negative breast cancer cells experienced significantly reduced metastatic growth in their lungs after being treated with luteolin," Hyder said. "In almost every case, the mice also saw no weight loss, which means luteolin has no toxic effects; this plant

compound is both safe and effective."

Hyder further tested luteolin and its effects on subduing the migration of triple-negative breast cancer cells throughout the body. The research team tested the cells in dishes that were treated with luteolin and found that migration was inhibited by the plant compound.



The lower-left quadrant shows a significant decrease in the metastasis of tumors in lung cells following treatment with Luteolin, a naturally occurring compound found in herbs and vegetables. Credit: Salman Hyder and Dove Press.

"Triple-negative [breast cancer cells](#) are highly mobile in the body, which helps them metastasize to other organs throughout the body," Hyder said.

"We found that luteolin inhibits that migration and also can kill [cancer cells](#). We contend that these studies support further investigation of luteolin as an anti-metastatic agent that could be used to combat triple-negative breast cancer and its metastasis."

The early-stage results of this research are promising. If additional studies are successful within the next few years, MU officials will request authority from the federal government to begin human drug development (this is commonly referred to as the "investigative new drug" status). After this status has been granted, researchers may conduct human clinical trials with the hope of developing new treatments for triple-negative breast cancer in women.

More information: Matthew Cook et al. Luteolin inhibits lung metastasis, cell migration, and viability of triple-negative breast cancer cells, *Breast Cancer: Targets and Therapy* (2016). [DOI: 10.2147/BCTT.S124860](#)

Provided by University of Missouri-Columbia

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