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# Soy increases radiation's ability to kill lung cancer cells, study shows

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A component in soybeans increases radiation's ability to kill lung cancer cells, according to a study published in the April issue of the *Journal of Thoracic Oncology*, the official monthly journal of the International Association for the Study of Lung Cancer.

"To improve radiotherapy for lung cancer cells, we are studying the potential of natural non-toxic components of soybeans, called soy isoflavones, to augment the effect of radiation against the tumor cells and at the same time protect normal lung against radiation injury," said Dr. Gilda Hillman, an associate professor in the Department of Radiation Oncology at Wayne State University's School of Medicine and the Karmanos Cancer Institute in Detroit.

"These natural soy isoflavones can sensitize cancer cells to the effects of radiotherapy, by inhibiting survival mechanisms which cancer cells activate to protect themselves," Hillman said. "At the same time, soy isoflavones can also act as antioxidants in normal tissues, which protect them against unintended damage from the radiotherapy. In a recent study, published in the Journal of Thoracic Oncology, we demonstrated that soy isoflavones increase killing of cancer cells by radiation via blocking DNA repair mechanisms, which are turned on by the cancer cells to survive the damage caused by radiation."

Human A549 non-small cell lung cancer (NSCLC) cells that were treated with soy isoflavones before radiation showed more DNA damage and less repair activity than cells that received only radiation.

Researchers used a formulation consisting of the three main isoflavones found in soybeans, including genistein, daidzein and glycitein.

Previously, researchers had found that pure genistein demonstrated antitumor activity in human NSCLC cell lines and enhanced the effects of EGFR-tyrosine kinase inhibitors. This study showed that the soy mixture had an even greater antitumor effect than pure genistein. The soy mixture also is consistent with the soy isoflavone pills used in clinical studies, which have been proven to be safe, researchers said.

**More information:** journals.lww.com/jto/pages/default.aspx

Provided by International Association for the Study of Lung Cancer