

Soy increases effectiveness of radiation at killing lung cancer, study shows

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A component in soybeans increases radiation's ability to kill lung cancer cells, according to a Wayne State University study published in the April 2011 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, 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 cells against radiation injury," said Gilda Hillman, Ph.D., associate professor in the Department of [Radiation Oncology](#) at Wayne State University's School of Medicine and the Karmanos Cancer Institute, who led the team of researchers.

"These natural soy isoflavones can sensitize cancer cells to the effects of radiotherapy by inhibiting the survival mechanisms that cancer cells activate to protect themselves," Hillman said. "At the same time, soy isoflavones can also act as antioxidants, which protect normal tissues against unintended damage from the radiotherapy."

Hillman and her team 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.

Previous research demonstrated that pure genistein demonstrated antitumor activity in human NSCLC cell lines and enhanced the effects of epidermal [growth factor receptor](#) (EGFR) [tyrosine kinase inhibitors](#). Hillman's 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 proven to be safe.

Provided by Wayne State University

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