Soy isoflavones radiosensitize lung cancer while mitigating normal tissue injury.


Source

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Abstract

BACKGROUND:

We have demonstrated that soy isoflavones radiosensitize cancer cells. Prostate cancer patients receiving radiotherapy (RT) and soy tablets had reduced radiation toxicity to surrounding organs. We have now investigated the combination of soy with RT in lung cancer (NSCLC), for which RT is limited by radiation-induced pneumonitis.

METHODS:

Human A549 NSCLC cells were injected i.v. in nude mice to generate lung tumor nodules. Lung tumor-bearing mice were treated with left lung RT at 12 Gy and with oral soy treatments at 1mg/day for 30 days. Lung tissues were processed for histology.

RESULTS:

Compared to lung tumor nodules treated with soy isoflavones or radiation, lung tissues from mice treated with both modalities showed that soy isoflavones augmented radiation-induced destruction of A549 lung tumor nodules leading to small residual tumor nodules containing degenerating tumor cells with large vacuoles. Soy isoflavones decreased the hemorrhages, inflammation and fibrosis caused by radiation in lung tissue, suggesting protection of normal lung tissue.

CONCLUSIONS:

Soy isoflavones augment destruction of A549 lung tumor nodules by radiation, and also mitigate vascular damage, inflammation and fibrosis caused by radiation injury to
normal lung tissue. Soy could be used as a non-toxic complementary approach to improve RT in NSCLC.

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