

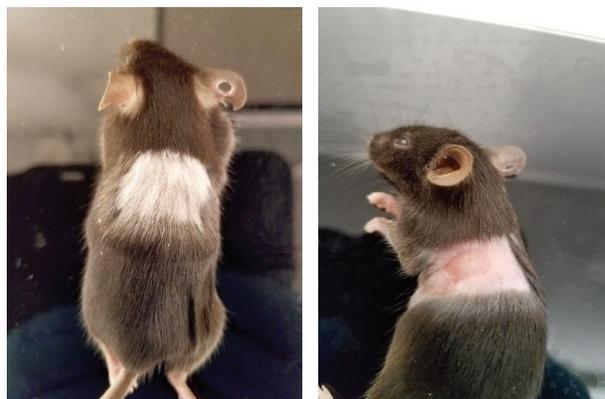
## HEALTH AND HUMAN SCIENCES

### Eating Broccoli: Can It Protect Cancer Patients From Radiation Skin Damage?

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Radiotherapy is a treatment for localized cancer in which a specific radiation dose induces tissue death and decreases tumors. Despite benefits offered, side effects such as hair loss, skin and tissue changes, and fatigue often accompany the treatment. Can radiation recipients avoid side effects on the skin while benefiting from radiotherapy? Will eating vegetables like broccoli confer skin protection against radiation? If yes, we may have found a treatment that prevents the skin side effects experienced by cancer patients receiving radiotherapy.

There is one compound in broccoli that looks promising for delivering answers to the previously asked questions. It is known that broccoli contains 3,3'-Diindolylmethane (DIM), a compound tested for its protection against radiation aftereffects in cultured cells. This study aims to test the ability of DIM to prevent skin damage from irradiation in a mouse model. The study used X-RAD-320 X-ray to irradiate two groups of mice, treatment and control groups. Treated mice received a 30 mg/kg of DIM intraperitoneal injection 30 minutes prior to chest irradiation, whereas the control group received no DIM injection pre-irradiation. Over 6 weeks following treatment, mice were closely observed and graded on the level of damage from 0-5, with 0 meaning no hair loss, and 5 meaning tissue death. Analysis of the damage grades versus



Treated mouse at week 6: grade 0 damage; control mouse at week 6: grade 3 damage.

time showed that treated mice experienced less severe skin side effects than those from the control group. Mice from the treatment group exhibited signs of improvement such as hair growth after having lost hair in the earlier weeks, and healing of skin that previously experienced redness and irritation. Therefore, this study provided hopeful results that 3,3'-Diindolylmethane can potentially be a protective agent against the skin side effects of irradiation.

*Research advisor Carlos Perez-Torres writes: "Huong's project looks into how the skin responds to radiation which can be a major concern for radiotherapy. Tasked with finding a drug that could potentially minimize the injury, Huong identified a compound found in vegetables like broccoli. Who knew that eating your veggies may protect you from radiation side effects?"*