

Broccoli sprout extract promising for head and neck cancer prevention

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Broccoli head

Broccoli sprout extract protects against oral cancer in mice and proved tolerable in a small group of healthy human volunteers, the University of Pittsburgh Cancer Institute (UPCI), partner with UPMC CancerCenter, announced today at the American Association for Cancer Research (AACR) Annual Meeting in Philadelphia.

The promising results will be further explored in a human clinical trial, which will recruit participants at high risk for head and [neck cancer](#) recurrence later this year. This research is funded through Pitt's Specialized Program of Research Excellence grant in head and neck

cancer from the National Cancer Institute.

"People who are cured of head and neck cancer are still at very high risk for a second cancer in their mouth or throat, and, unfortunately, these second cancers are commonly fatal," said lead author Julie Bauman, M.D., M.P.H., co-director of the UPMC Head and Neck Cancer Center of Excellence. "So we're developing a safe, natural molecule found in cruciferous vegetables to protect the oral lining where these cancers form."

Previous studies, including large-scale trials in China, have shown that [cruciferous vegetables](#) that have a high concentration of sulforaphane - such as broccoli, cabbage and garden cress - help mitigate the effects of environmental carcinogens.

Dr. Bauman collaborated with Daniel E. Johnson, Ph.D., professor of medicine at Pitt and a senior scientist in the UPCI Head and Neck Cancer Program, to test sulforaphane in the laboratory. For several months, Dr. Johnson and his team gave sulforaphane to mice predisposed to oral cancer and found that it significantly reduced the incidence and number of tumors.

"The clear benefit of sulforaphane in preventing oral cancer in mice raises hope that this well-tolerated compound also may act to prevent [oral cancer](#) in humans who face chronic exposure to environmental pollutants and carcinogens," said Dr. Johnson.

Dr. Bauman treated 10 healthy volunteers with fruit juice mixed with sulforaphane-rich broccoli sprout extract. The volunteers had no ill-effects from the extract and protective changes were detectable in the lining of their mouths, meaning it was absorbed and directed to at-risk tissue.

These findings were enough to prompt a clinical trial that will recruit 40 volunteers who have been curatively treated for head and neck cancer. The participants will regularly take capsules containing broccoli seed powder to determine if they can tolerate the regimen and whether it has enough of an impact on their oral lining to prevent cancer. From there, larger clinical trials could be warranted.

"We call this 'green chemoprevention,' where simple seed preparations or plant extracts are used to prevent disease," said Dr. Bauman, also an associate professor in Pitt's School of Medicine. "Green chemoprevention requires less money and fewer resources than a traditional pharmaceutical study, and could be more easily disseminated in developing countries where [head and neck cancer](#) is a significant problem."

Provided by University of Pittsburgh Schools of the Health Sciences

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