Walnut diet slows tumor growth in mice

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(Medical Xpress) -- Mice genetically programmed to develop prostate cancer had smaller, slower growing tumors if they consumed a diet containing walnuts, UC Davis researchers report in the current issue of the *British Journal of Nutrition*.

UC Davis researchers, with colleagues at the USDA Western Regional Research Center in Albany, Calif., assessed tumor size in mice fed different diets for 9, 18 and 24 weeks. They found that the mice that consumed the human equivalent of 2.4 ounces of whole walnuts daily, gained weight at the same rate as mice fed a soybean oil diet formulated to match the nutrients, fat levels and fatty acid profiles of the walnut diet. At 18 weeks, however, the tumor weight of the walnut-fed group was approximately half that of the mice consuming the soybean oil diet. Overall, the rate of tumor growth was 28 percent lower in the walnut-fed mice.

A low-fat diet is frequently recommended for reducing a man's risk for developing or slowing growth of existing prostate cancer, but the UC Davis study suggests that excluding walnuts, which are high in fat but rich in omega-3 polyunsaturated fats, antioxidants and other plant chemicals, may mean foregoing a protective effect of walnuts on tumor growth.

"If additional research determines that walnuts have the same effect in men as they do in mice, adhering to a diet that excludes walnuts to lower fat would mean that prostate cancer patients could miss out on the beneficial effects of walnuts," said lead author Paul Davis, a research

nutritionist in the Department of Nutrition at UC Davis and researcher with the UC Davis Cancer Center.

Prostate cancer is the second most common cancer in American men. One in six men will be diagnosed with the cancer, most commonly in later life. But relatively few — one in 36 — will die from the disease because most tumors do not spread beyond the local site, according to the National Cancer Institute.

"These characteristics of prostate cancer make adding walnuts to a diet attractive as part of prostate cancer prevention," Davis said.

Davis added that some studies have hinted that walnuts may prevent the actual formation of tumors. "But more immediately, our findings suggest that eating a diet containing walnuts may slow prostate tumor growth so that the tumor remains inside the prostate capsule. If proven applicable in humans, men with prostate cancer could die of other causes — hopefully old age."

The researchers found no single constituent responsible for the beneficial effects of walnuts. For example, the study found effects on multiple signaling and metabolic pathways related to tumor growth and metabolism and that walnut-fed mice had lower blood insulin-like growth factor (IGF-1), a protein strongly associated with prostate cancer.

Walnut-fed mice also had lower LDL cholesterol (the bad cholesterol). High LDL is an established heart disease risk factor, and has more recently been linked to tumor growth, suggesting that the same food that promotes a healthy heart can be helpful to patients with prostate cancer. Finally, distinct differences were noted in the way the liver, a major source of IGF-1 and cholesterol, metabolized the walnut diet compared with the soybean oil diet, despite the diets' nutritional similarities.

The research was funded by the California Walnut Board. Together with the American Institute for Cancer Research, the board is currently funding a follow-up mouse study to validate the findings and further explore the possible reasons for the beneficial effects of walnuts.

Provided by UC Davis

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