

Using unique combination of diet and radiation therapy, researchers successfully destroy brain tumor cells

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A team of brain cancer researchers at Barrow Neurological Institute at St. Joseph's Hospital and Medical Center has effectively treated brain tumor cells using a unique combination of diet and radiation therapy. The study, "The Ketogenic Diet Is an Effective Adjuvant to Radiation Therapy for the Treatment of Malignant Glioma," was published in *PLOS ONE*.

Led by Adrienne C. Scheck, PhD, Principal Investigator in Neuro-Oncology and Neurosurgery Research at Barrow, the groundbreaking research studied the effects of the [ketogenic diet](#) in conjunction with radiation therapy for the treatment of malignant gliomas, an aggressive and deadly type of brain tumor. The ketogenic diet is a high-fat, low-carbohydrate diet that alters metabolism and is used in the treatment of [pediatric epilepsy](#) that does not respond to conventional therapies. The diet's effects on brain homeostasis have potential for the treatment of other neurological diseases, as well.

In the study, mice with high-level malignant gliomas were maintained on either a standard or a ketogenic diet. Both groups received radiation therapy. Dr. Scheck's team discovered that animals fed a ketogenic diet had an increased median survival of approximately five days relative to animals maintained on a standard diet. Of the mice that were fed a ketogenic diet and received radiation, nine of 11 survived with no signs of [tumor recurrence](#), even after being switched back to standard food, for over 200 days. None on the standard diet survived more than 33 days.

One theory behind the success of the treatment is that the ketogenic diet may reduce growth factor stimulation, inhibiting tumor growth. Barrow scientists also believe that it may reduce inflammation and edema surrounding the tumors.

This is believed to be the first study of its kind to look at the effects of the ketogenic diet with radiation.

Dr. Scheck believes that the study has promising implications in the treatment of human malignant gliomas. "We found that the ketogenic diet significantly enhances the anti-tumor effect of radiation, which suggests that it may be useful as an adjuvant to the current standard of care for the treatment of human malignant gliomas," she says.

Dr. Scheck adds that the ketogenic diet could quickly and easily be added into current brain tumor treatment plans as an adjuvant therapy without the need for FDA approval. She is currently exploring options for clinical trials.

Provided by St. Joseph's Hospital and Medical Center

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