Learn how to reduce diet and lifestyle risk factors for Glioblastoma Multiforme GBM Brain Cancer.

Be proactive - Don’t continue to feed or stimulate cancer cell growth.

Glioblastoma Multiforme GBM Diet and Lifestyle Research Report

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Aluminum

In a laboratory study aluminum caused inflammation of GBM cells.\(^1\) Inflammation stimulates GBM cell growth. Additional information and how natural products decrease inflammation chemicals in GBM is found in other reports at www.NaturalCancerReports.com.

Blood concentrations of aluminum were significantly increased in patients with malignant gliomas compared to patients without brain cancer.\(^2\)

Aluminum should be avoided. Common sources of aluminum include:
- Antiperspirants
- Soda pop cans
- Aluminum cookware
- Baking powder
- Bleached flour
- Processed cheese

Don’t use antiperspirants or antiperspirant crystals from health food stores. Both may contain aluminum.

Underarm deodorants are ok to use so long as they don’t have aluminum listed in the ingredients.

Acidic soda pop will dissolve the aluminum in soda pop cans. Add the cancer cell stimulating effect of sugar and you are adding two risk factors for Glioblastoma. God did not give us soda pop to drink. It’s not natural. If you have GBM you should avoid soda pop.

Cooking acidic foods such as tomatoes may cause the aluminum to be dissolved into the foods. It is best to use stainless steel, cast iron or glass pots and pans to cook with.


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\(^1\) Brain Res. 2002 Apr 12;933(1):60-5. Pro-inflammatory effects of aluminum in human glioblastoma cells. Campbell A, Yang EY, Tsai-Turton M, Bondy SC. Department of Community and Environmental Medicine, Center for Occupational and Environmental Health, University of California-Irvine, Irvine, CA 92697-1820, USA. aghadimi@uci.edu

Aspartame

Aspartame is an artificial sweetener known as NutraSweet®.

A metabolite of aspartame, diketopiperazine, contributes to the formation of tumors in the brain such as gliomas, medulloblastomas and meningiomas. Glial cells are the main source of tumors, which can be caused sweetener in the brain.³

When mice are fed aspartame they have a 17.7-32.8% increased amount of oxidative damage and a 25.6-31.6% decreased glutathione levels in the brain.⁴ Both factors increase the risk of glioblastoma.

An early animal study revealed an exceedingly high incidence of brain tumors in aspartame-fed rats compared to no brain tumors in concurrent controls. Aspartame was introduced into US food and beverage markets several years prior to the sharp increase in brain tumor incidence and malignancy.⁵

Most human medical studies are short term, often less than 6 year, evaluations and fail to show a link between aspartame consumption and glioblastoma.⁶ ⁷

Even though Aspartame does not contain calories it still increases blood glucose/sugar levels and increases the risk of diabetes.⁸ Both of these health issues increase the risk of glioblastoma. Additional information about glucose, sugar and hyperglycemia is found in this research paper.

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³ Folia Neuropathol. 2013;51(1):10-7. Effects of aspartame metabolites on astrocytes and neurons. Ryczek K, Jaworska-Adamu JE. Department of Animal Anatomy and Histology, Faculty of Veterinary Medicine, University of Life Sciences, Lublin, Poland.

⁴ Neurotox Res. 2012 Apr;21(3):245-55. Effect of aspartame on oxidative stress and monoamine neurotransmitter levels in lipopolysaccharide-treated mice. Abdel-Salam OM, Salem NA, Hussein JS. Department of Toxicology and Narcotics, National Research Centre, Tahrir St., Dokki, Cairo, Egypt.


Caffeine

In a large European population study researchers found coffee and tea consumption decreased the risk of glioblastoma.\(^9\)

In glioblastoma cell cultures caffeine inhibited IP(3)R3-mediated Ca(2+) release and inhibited migration (metastasis). Caffeine greatly increased survival times in mice with glioblastoma transplanted tumors.\(^10\)

Treatment of glioblastoma cells with caffeine in a laboratory test demonstrated that caffeine caused the cancer cells to pause in the early S phase of cell division and growth.\(^11\)

Unless you have caffeine sensitivity, brew and drink organic strong coffee, up to espresso strength, four times daily, two cups in the morning, one after lunch and one midafternoon. If you are caffeine sensitive and have sleep problems consume 2-3 cups of strong coffee in the a.m. Coffee contains more caffeine than tea.

**SPECIAL NOTE:** If you are taking Temodar (temozolomide / TMZ) and other chemotherapy drugs I would **NOT** consume high amounts of caffeine except tea. Caffeine is one of the most potent activators of an antioxidant repair system called Nrf2. Inhibiting Nrf2 enhanced the effectiveness of temozolomide (TMZ) chemotherapy.\(^12\)

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\(^11\) Cell Cycle. 2008 May 15;7(10):1440-8DNA replication in early S phase pauses near newly activated origins. Frum RA, Chastain PD 2nd, et al, Department of Pathology and Laboratory Medicine, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-7525, USA.

\(^12\) Oncol Rep. 2013 Jan;29(1):394-400. Knockdown of Nrf2 enhances autophagy induced by temozolomide in U251 human glioma cell line. Zhou Y, Wang HD, Zhu L, et. al., Department of Neurosurgery, Jinling Hospital, School of Medicine, Nanjing University, Nanjing 210002, P.R. China.
Copper is known cause of angiogenesis (new blood vessel formation) in cancer tumors including GBM. Copper levels are higher in malignant neoplasms and in patient with brain cancer.

Laboratory experiments demonstrate that copper reduction inhibits GBM growth and invasiveness. This group of researchers gave 40 patients penicillamine injections to lower copper levels. Serum copper was effectively reduced by diet and penicillamine but this strategy did not improve survival in patients with GBM.

Please ask for free additional information about how to do a simple $30 at home test to see if you are toxic in copper. Email keith@naturalcaresolution.com

Ask your alternative oriented healthcare provider for a toxic metal and mineral urine test.

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Glucose / Sugar / Hyperglycemia

GBM growth is stimulated by glucose and elevated blood glucose levels. Patients with normal blood glucose levels live longer than those with elevated blood glucose levels.\(^{17} \ 18 \ 19\)

A study in France found people who skipped meals several times per week had a 65% reduction in the risk of GBM.\(^{20}\) Being able to skip meals may be a sign of good glucose control.

Researchers at Boston College believe that GBM is primarily a metabolic disease that can be managed through changes in metabolic environment. Normal brain cells can readily transition to ketone bodies (B-hydroxybutyrate) for energy when glucose/sugar is restricted. Malignant brain tumors are strongly dependent on glycolysis (glucose or sugar) for energy and do not thrive on ketones. Based on medical research in mice and humans these researchers propose glioblastoma treatment with calorie restriction and a ketogenic diet.\(^{21}\)

Researchers in Italy used a ketogenic diet on a 65 year old woman following an incomplete surgical removal of glioblastoma multiforme tumor. Before the standard medical treatment the woman did a water-only fast and a restricted 4:1 (fat:carbohydrate + protein) ketogenic diet that delivered about 600 calories per day. The patient also did the restricted ketogenic diet during the standard medical treatment. Her diet was supplemented with vitamin and minerals. The doctors stopped dexamethasone during the course of treatment. After two months of treatment, the patient’s body weight was reduced by 20%.

\(^{17}\) Cell Cycle. 2010 Jul 15;9(14):2742-8. microRNA-451: A conditional switch controlling glioma cell proliferation and migration. Godlewski J, Bronisz A, Nowicki MO, Chiocca EA, Lawler S. Dardinger Laboratory for Neuro-oncology and Neurosciences, The Ohio State University Medical Center and James Comprehensive Cancer Center, Columbus, OH, USA.


\(^{19}\) Neurosurgery. 2008 Aug;63(2):286-91; discussion 291. Persistent outpatient hyperglycemia is independently associated with decreased survival after primary resection of malignant brain astrocytomas. McGirt MJ, Chaichana KL, Gathinji M, Attenello F, Than K, Ruiz AJ, Olivi A, Quiñones-Hinojosa A. Department of Neurosurgery, Johns Hopkins School of Medicine, and The Johns Hopkins Neuro-oncology Surgical Outcomes Research Laboratory, Baltimore, Maryland, USA


and no brain tumor tissue was detected with PET and MRI scans. Her blood glucose levels decreased and her urinary ketone levels increased. Sadly after going back to a normal diet her tumor returned within 10 weeks. Researchers believed the restricted calorie, ketogenic diet, helped as rapid regression of GBM is rare in older patients following incomplete surgical tumor removal and standard medical treatment.\textsuperscript{22}

Boston College researchers place GBM tumors in laboratory mice and restricted their calorie intake. Calorie restriction significantly reduced the invasion of tumor into other parts of the brain. Calorie restriction also decreased the number of rapid growing tumor cells and the number of blood vessels to the tumors. Researchers state, “\textit{CR (calorie restriction) can be effective in reducing malignant brain tumor growth and invasion}.”\textsuperscript{23}

The medical history of 191 patients with GBM, from 1999 to 2004 was evaluated. This was before the standard use of temozolomide. A mean glucose of less than 94 mg/dl increased survival time by 5.4 months compared to a mean glucose level greater than 137 mg/dl. Each increased blood glucose level progressively increased the risk of dying. These results were observed even after adjusting for dexamethasone, a known elevator of glucose.\textsuperscript{24}

Persistent outpatient hyperglycemia (high blood sugar/glucose) was associated with decreased survival in patients undergoing surgical removal for malignant brain tumors. This concern and was independent of the degree of disability, tumor grade, diabetes, prolonged dexamethasone use, or subsequent treatment modalities. Authors state, “\textit{Increased glucose control is warranted in this patient population and may contribute to improved outcomes in the treatment of malignant brain astrocytomas}.” GBM is classified is an astrocytoma.\textsuperscript{25}

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\textsuperscript{22} Nutr Metab (Lond). 2010 Apr 22;7:33. Metabolic management of glioblastoma multiforme using standard therapy together with a restricted ketogenic diet: Case Report. Zuccolì G, Marcello N, et. al., Radiology Department, Arcispedale Santa Maria Nuova, Reggio E, 42100, Italy.


\textsuperscript{25} Neurosurgery. 2008 Aug;63(2):286-91; discussion 291. Persistent outpatient hyperglycemia is independently associated with decreased survival after primary resection of malignant brain astrocytomas. McGirt MJ, Chaichana KL, et. al., Department of Neurosurgery, Johns Hopkins
Researchers at University of California at San Francisco evaluated glucose withdrawal on GBM cells in the laboratory. Glucose withdrawal induced extensive apoptosis (cell death) in GBM cells but not affect normal brain cells. The researchers state, “This study implicates glycolysis (using sugar for energy production) as a potentially efficient and selective target for glioblastoma multiforme treatment.”

Ketogenic food information is available at [http://www.naturalcancerreports.com/Brain-Cancer-Alternative-Treatments.html](http://www.naturalcancerreports.com/Brain-Cancer-Alternative-Treatments.html)

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X-Ray

X-ray, particularly in children treated with x-rays for lymphoblastic leukemia show a significantly elevated risk of developing GMB, often within 10 years after therapy.\textsuperscript{27,28}

Limiting X-Ray exposure to the brain may be a good idea. This includes dental x-rays.
