

Individual Anteaiox Phenols and Brain Cancer

Resveratrol

“RSV, a stilbenoid with a natural polyphenol configuration analogous to diethylstilbestrol and estradiol is a promising therapeutic agent in glioma. Individually, RSV has proven to very potent in glioma cells. It is able to down-regulate glioma angiogenesis as well as metastasis. In combination with other agents, RVS augment its potency in glioma. RVS is able to cross the BBB via gap junctions making it very efficient central nervous system medication.”

105. Advances in Bioscience and Clinical Medicine, 2019

“It is known that resveratrol crosses the blood-brain barrier and influences the brain’s structure. Its ability to prevent carcinogenesis in the brain includes the suppression of oxidative stress and inflammation, as well as inhibition of cell proliferation with the triggering of cell death mechanisms. It may influence cancer cells’ activity via affecting various signaling mechanisms, including NF-κB, p53, Wnt, PI3K/AKT/mTOR, or STAT3.” 106. Biomolecules, 2020

Curcumin

“Extensive research in the past two decades demonstrates the beneficial effects of phytochemicals in general, and especially curcumin, in a wide range of human diseases, encompassing NDDs and brain tumors, and particularly GBM... Since curcumin influences various aberrant signaling pathways associated with GBM, and especially mTOR-dependent ATG, it should be further exploited as a potential adjunct therapy for GBM standard treatments.” 107. Molecules, 2020

Kaempferol

“In conclusion, this study revealed kaempferol possesses good anti-glioma activity by inducing ROS, and subsequently leads to autophagy and pyroptosis, highlighting its clinical potentials as a natural nutrient against glioblastoma.” 108. Frontiers in Bioengineering and Biotechnology, 2020

EGCG

“EGCG induces cell death, prevents cellular proliferation, and limits invasion in multiple glioma cell lines. Furthermore, EGCG enhances the efficacy of anti-glioma therapies, including irradiation, temozolomide, carmustine, cisplatin, tamoxifen, and TNF-related apoptosis-inducing ligand.... Last, EGCG inhibits some NADPH-producing enzymes, thus disturbing redox status and metabolism of glioma cells. In conclusion, EGCG may be a suitable adjuvant to potentiate anti-glioma therapies.”

109. Nutrition and Cancer, 2018

Caffeic Acid and Catechin

“Interestingly, multiple natural compounds have shown antitumor and apoptotic effects in TMZ resistant and p53 mutant GBM cell lines and also displayed synergistic effects with TMZ...As summarized here, a wealth of preclinical data exists to support further study using natural products in GBM.” 110. Oncotarget, 2018

Formononetin

“A number of studies have confirmed that formononetin can achieve the therapeutic effects of tumor by inducing critical pro-apoptotic proteins expression and cell apoptosis.. Our research showed that the combination of formononetin with TMZ could curb malignant biological behaviors of glioma cell in a synergistic way. Formononetin would be expected to be a potential drug in postoperative adjuvant therapy to improve the sensibility of TMZ for glioma and reduce side effects.”

111. Biol. Pharm. Bull., 2018

Ellagic Acid

“These data indicate that EA can suppress glioblastoma proliferation and invasion by inhibiting the Akt and Notch signaling pathways, which suggests that EA may be beneficial for the treatment of glioblastoma.” 112. Oncology Reports, 2017

Gallic Acid

“The aim of the present study was to investigate the toxic effects of GA on the T98G human glioblastoma cell line and its capacity to modulate the expression of microRNAs targeting the genes involved in tumor growth and invasion...The results confirmed in the T98G cells the anti-proliferative effect of GA reported for other glioma cell lines and showed that the miRNA expression changes depending on GA concentrations.” 113. Int. Journal of Oncology, 2015

CAPE

“Other authors have also proved the excellent results of CAPE against glioma cell lines, by inactivating DNA and arresting the cell cycle of the tumor cells.”

114. Anti-Cancer Agents in Medicinal Chemistry, 2013

p-Coumaric and Ferulic Acids

“Consequently, it was revealed that ULE inhibited the growth of glioblastoma in vitro and when ULE were used at the concentrations ranged from 3.125 to 25 mg/L, they will be able to become alternative treatments that in GBM therapy process (Emsen et al. 2016). In addition, information about the substances that cause the increase of the antioxidant capacity in healthy cells was obtained thanks to the determination of some of the antioxidant components in the extract.”

115. Annals of the Brazilian Academy of Sciences, 2019

Quercetin

“In summary, due to its promising biological activities such as anti-inflammatory, anti-proliferative, antiangiogenic, antioxidant, and pro-apoptotic effects, as well as its capacity to interact with various potential molecules, quercetin could be considered as a bioactive compound with anticancer potential.” 116. Biofactors, 2019