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# Extracellular vesicles-mediated communication between glioblastoma and astrocytes promotes pro-tumorigenic activation

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## Abstract

Glioblastoma multiforme (GBM) is the most common and aggressive primary brain tumor, classified by the WHO as grade IV astrocytoma, with poor prognosis and limited treatment options. Extracellular vesicles (EVs) are lipid bilayer nanoparticles present in all biological fluids. They mediate intercellular communication by transferring proteins, lipids, mRNA, and miRNA. While their diagnostic potential in GBM has been explored, their role in diffuse glioblastoma invasion remains underinvestigated. In this study, human astrocytes (NHA) were treated with EVs isolated from GBM cell lines (U87-MG and A172), and phenotypic changes were assessed using proliferation assays (MTS, EdU), cell cycle analysis, RT-qPCR, TGM2 ELISA and western blot. The results demonstrated that GBM-derived EVs significantly contribute to astrocyte phenotypic alterations associated with invasion and metastasis. These findings highlight the importance of EV-mediated intercellular communication in GBM progression and suggest further in vivo studies to elucidate their role in central nervous system invasion.

**Keywords:** Astrocytes; Brain tumor; Extracellular vesicles; Glioblastoma; Invasion.

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