MCT1

High Expression in GBM:

MCT1 and MCT4 are significantly overexpressed in IDH-wildtype glioblastomas compared to IDH-mutant gliomas (grades 2–4), both at the protein (IHC) and mRNA levels.

Endothelial Proliferation Specificity:

Loss of MCT1 expression was noted in areas of endothelial proliferation within grade 4 gliomas, contrasting with its presence in non-proliferating endothelium—suggesting a specific microenvironmental regulation.

Prognostic Implications:

High MCT1/4 expression correlates with shorter overall survival when analyzing all gliomas together, although this correlation was not significant in GBM alone.

Therapeutic Insight – Syrosingopine:

Syrosingopine, a dual MCT1/4 inhibitor and old antihypertensive drug with good CNS penetration, showed dose-dependent anti-tumor effects in vitro on U87MG and LN229 glioma cell lines:

Increased cytotoxicity

Enhanced apoptosis

Reduced migration/invasion

Clinical Relevance:

MCT1/4 may serve as diagnostic immunohistochemical markers.

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Syrosingopine may represent a promising adjunctive therapy for GBM [1)]

1)
Behera MM, Purkait S, Ghosh A, Sable MN, Sahu RN, Chhabra G. The Monocarboxylate Transporters MCT1 and MCT4 Are Highly Expressed in Glioblastoma and Crucially Implicated in the Pathobiology. Neuropathology. 2025 Mar 27. doi: 10.1111/neup.70006. Epub ahead of print. PMID: 40145253.