Vimentin

Vimentin is a type III intermediate filament (IF) protein that is expressed in mesenchymal cells. IF proteins are found in all metazoan cells as well as bacteria. IF, along with tubulin-based microtubules and actin-based microfilaments, comprise the cytoskeleton. All IF proteins are expressed in a highly developmentally-regulated fashion; vimentin is the major cytoskeletal component of mesenchymal cells. Because of this, vimentin is often used as a marker of mesenchymally-derived cells or cells undergoing an epithelial-to-mesenchymal transition (EMT) during both normal development and metastatic progression.

Vimentin, one of the major cytoskeletal proteins, is associated with cellular structure. However, the function of vimentin in GBM is still undefined. In a study, Zhao et al., investigated the expression level of vimentin in 179 GBM tissues using immunohistochemistry. We found that the vimentin expression level was associated with the time to progression (P=0.029). A Kaplan-Meier analysis revealed that patients with high vimentin expression had a significantly shorter overall survival (P=0.0002) and progression-free survival (P=0.0001) compared with those with low expression. Furthermore, in vitro experiments showed that withaferin-A, a chemical inhibitor of vimentin, could inhibit GBM cell migration and invasion activity when its concentrations were <0.5 μM, and higher concentrations of withaferin-A could decrease the viability of U251and U87 cells significantly. In conclusion, our results indicated that vimentin may play an important role in the progression of GBM [1].

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Zhao J, Zhang L, Dong X, Liu L, Huo L, Chen H. High Expression of Vimentin is Associated With Progression and a Poor Outcome in Glioblastoma. Appl Immunohistochem Mol Morphol. 2016 Aug 23. [Epub ahead of print] PubMed PMID: 27556820.