CD31

Platelet endothelial cell adhesion molecule (PECAM-1) also known as cluster of differentiation 31 (CD31) is a protein that in humans is encoded by the PECAM1 gene found on chromosome 17.

PECAM-1 plays a key role in removing aged neutrophils from the body.

PECAM-1 is found on the surface of platelets, monocytes, neutrophils, and some types of T-cells, and makes up a large portion of endothelial cell intercellular junctions. The encoded protein is a member of the immunoglobulin superfamily and is likely involved in leukocyte transmigration, angiogenesis, and integrin activation.

CD31 is normally found on endothelial cells, platelets, macrophages and Kupffer cells, granulocytes, T / NK cells, lymphocytes, megakaryocytes, osteoclasts, neutrophils.

CD31 is also expressed in certain tumors, including epithelioid hemangioendothelioma, epithelioid sarcoma-like hemangioendothelioma, other vascular tumors, histiocytic malignancies, and plasmacytomas. It is rarely found in some sarcomas, such as Kaposi's sarcoma, and carcinomas.

In immunohistochemistry, CD31 is used primarily to demonstrate the presence of endothelial cells in histological tissue sections. This can help to evaluate the degree of tumour angiogenesis, which can imply a rapidly growing tumour. Malignant endothelial cells also commonly retain the antigen, so that CD31 immunohistochemistry can also be used to demonstrate both angiomas and angiosarcomas. It can also be demonstrated in small lymphocytic and lymphoblastic lymphomas, although more specific markers are available for these conditions.

In a study Musumeci et al. have investigated whether the expression levels of CD31/ PECAM1 are deregulated in human glioblastoma tissue specimens and also correlated the expression levels of CD31/PECAM1 with those of HIF1a. Finally, they established a correlation between the expression levels of CD31/PECAM1 and HIF-1α, and those of two other biomarkers, namely N-cadherin and ADAM10, of aggressiveness in the same tumors. Results have shown an increased expression of CD31/PECAM1 correlated to HIF-1α expression, confirming evidence demonstrating that different types of tumor are able to trigger aberrant angiogenesis through HIF-1α. Moreover, they also established a further correlation among CD31/PECAM1 and HIF-1α and N-cadherin and ADAM-10, two other markers of aggressiveness in the same tumors [1)]

1)
G, Castorina A, Magro G, Cardile V, Castorina S, Ribatti D. Enhanced expression of CD31/platelet endothelial cell adhesion molecule 1 (PECAM1) correlates with hypoxia inducible factor-1 alpha (HIF-1α) in human glioblastoma multiforme. Exp Cell Res. 2015 Sep 13. pii: S0014-4827(15)30090-2. doi: 10.1016/j.yexcr.2015.09.007. [Epub ahead of print] PubMed PMID: 26376118.