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The role of caveolin-1 in the regulation of angiogenesis

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Caveolin-1 (cav-1) is the principal structural component of caveolae which functions as scaffolding protein for the integration of a variety of signaling pathways. In this study, we show that siRNA-induced cav-1 down regulation in human endothelial cells (EC) increased cell size and provoked cell cycle arrest at G1/S phase transition. In addition, silencing of cav-1 reduced matrix metalloproteinases (MMPs) activity which, in turn, affected cell migration and VEGF-induced tube formation of EC in vitro. These data indicate that proper expression of cav-1 is required for maintaining typical functions of EC such as proliferation and the formation of new blood vessels. In addition, we observed a marked increase of cell size, after cav-1 silencing, which might indicate the involvement of this scaffolding protein in the way by which cells perceive changes in their microenvironment. In conclusion, this study proposes cav-1 as an interesting target molecule for studying cellular mechanisms which occur in physiological as well as pathological conditions such as senescence and tumorigenesis.

References

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