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Mechanism of elastin mediated angiogenic signaling regulation by hexastatin Sudhakar Akul Yakkanti

USA

Cancer is currently one of the most prevalent causes of human deaths in the world. Current therapeutic options aim only to slow the progression of cancer disease. Therefore, a renewed effort must be made to identify relevant endogenous cancer inhibitors that could be exploited as therapeutic drugs. We identified endogenous anti-cancer molecules, which are released from extracellular matrix (ECM) and were identified as angioinhibitors of tumor growth. These endogenous angioinhibitory proteins bind to the cell surface molecules and transduce the signaling & regulate angiogenesis. Thus, cell surface molecules serve as transmembrane linkers between the ECM and cytoskeleton for outside-in signaling. One such endogenous molecule, Hexastatin, a 26-kDa protein from the C-terminal non-collagenous domain of alpha6 type IV collagen was identified as an inhibitor of angiogenesis but is mediated signaling is not yet known. Our findings suggests that Hexastatin interacting with cell surface molecules and inhibiting laminin mediated angiogenesis by inhibiting phosphorylation of FAK/PI-3K/Akt/mTOR and prevents MT1-MMP expression that leads to endothelial cell migration and tube formation. Further, we also demonstrated that hexastatin inhibits hypoxia induced pro-inflammatory molecules via FAK/Akt pathway, leading to inhibition of tumor angiogenesis and tumor growth both *in-vitro* and *in-vivo*.

Biography

Sudhakar Akul Yakkanti is the founder Director of Cell Signaling, Retinal and Tumor Angiogenesis Laboratory at Boys Town National Research Hospital, Associate Professor at University of Nebraska Medical Center, Omaha, NE, USA. He did his postdoctoral training at Harvard Medical School, Boston, MA, USA (2003). He received President's fellowship (1992), GATE (1996) and CSIR (2007-2000) fellowships from Government of India. He received Mahindra & Mahindra Educational Award (2000) and Young Clinical Scientist Awards from Flight Attendant Medical Research Institute (FAMRI) in 2007 and 2010. He also received Bio-Bio Young Scientist Award from OMICS publishing group; Michael A. O'Connor Young Investigator Award; RO1 grant Award from NIH/NCI and Research Scholar Grant Award from ACS (2010). He is serving as AIBS/NIH-RO1 Grant reviewer for DT study section. He has published more than 40 research articles in several top journals including Science, Cancer Cell, JCI, Blood, PNAS, Gastroenterology, Cancer Research, BC, IOVS, Mol Vision, J Clinical & Experimental ophthalmology, JCST etc. He is serving as an Editor-in-Chief, Executive Editor, Editor and Editorial board member of reputed journals and is serving as a reviewer for more than 26 scientific journals including JCI, Blood, Circulation, Circulation Research, Cancer research, Clinical Cancer research etc. He was honored by giving a position as Keynote Speaker, Chairman, Co-chairman and organizing committee member for several national and international conferences.

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