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Sudhakar Yakkanti

Center for Cancer & Metabolism Cell Signaling Laboratory, Bioscience Division SRI International, USA

Endogenous metabolites role in regulation of metastasis

Metastasis is frequently deadlier than the original tumor-ultimately, reducing the risk or occurrence of metastasis could effectively cure or at least manage human cancer. My laboratory has carried out research that could significantly contribute to the control of malignant progression, involving the use of endogenous metabolite that is released from the extracellular matrix, which is both an endogenous angiogenesis inhibitor and anti-metastatic molecule. The signaling mechanism(s) underlying the influence of these metabolites on regulation of tumor angiogenesis is known, where as regulation of tumor metastasis are not yet known. We identified that one of the endogenous metabolite binds to different cell surface integrins, inhibits different cellular signaling in a manner distinct from that of other metabolites studied to date. Treatment of endothelial cells with this metabolite specifically inhibiting κ -elastin mediated phosphorylation of FAK, Akt, mTOR and PI-3K signaling. In addition different *in-vitro* and *in-vivo* studies, we found that this metabolite possibly binding to Laminin D-III and D-IV domains and inhibits Laminin degradation by the matrix metalloprotease-14 (MMP-14), and thereby reduces the generation of different sized Laminin peptides that can bind to the EGF receptor and promote cancer metastasis, in addition to its integrin(s) mediated signaling. Our findings suggest that this metabolite interacting with different cell surface integrins and cross talking with other molecules and inhibiting tumor angiogenesis and tumor metastasis both *in-vitro* and *in-vivo*.

Biography

Sudhakar Yakkanti Former Associate Director at Center for Cancer & Metabolism, Bioscience Division, SRI International, California. He did his Postdoctoral training at Harvard Medical, Boston USA. He received Indian President's fellowships, Young Clinical Scientist (YCS), Michael A. O'Connor Young Investigator Awards from Flight Attendant Medical Research Institute (FAMRI) and Mayo Clinic. He has published about 40 research articles including Science, JCI, Blood, PNAS etc. His research focuses on cell signaling and tumor metastasis, which is supported by research grants. He was served as grant reviewer for DT and FAMRI study sections. He is serving as an Editor-in-Chief and also honored as keynote speaker and session chair for many conferences.

yakkantisuds@gmail.com