

Regulation of angiogenesis by endogenous metabolite

Smita C. Pawar^{1,2,3}

¹Department of Genetics, Osmania University, Hyderabad, AP, India

²Department of Genetics, Cell Biology and Anatomy, University of Nebraska Medical Center, Omaha, USA

³Cell Signaling, Retinal and Angiogenesis Laboratory, Department of Genetics, Boys Town National Research Hospital, Omaha, USA

Choroidal neovascularisation is the primary cause of blindness in a variety of common retinal diseases including retinopathy of prematurity, age related macular degeneration, proliferative diabetic retinopathy, among other vascular diseases. Angioinhibitory therapies are starting to give hopeful results in these ocular diseases. In this study the angioinhibitory activity of endogenous metabolite derived from extra cellular matrix was analyzed *in-vitro* and *in-vivo*. Mouse choroidal endothelial cells treated with different doses of endogenous metabolite and performed *in-vitro* proliferation, migration and tube formation assays. Matrix metalloproteinase-2 (MMP-2) activation and MMP-2/endogenous metabolite complex formation were studied using different methods. *In-vitro* angioinhibitory effects of endogenous metabolite were studied in different mice models. Endogenous metabolite demonstrated anti-proliferative activity and inhibits mouse choroidal endothelial cells migration, tube formation *in-vitro*. Endogenous metabolite binds pro-MMP-2 and inhibits its activation mediated by both membrane-type-1 MMP and 4-amino-phenyl mercuric acetate *in-vitro*. Endogenous metabolite also confirmed that significant inhibition of integrin dependent and independent *in-vivo* and *in-vivo* angiogenesis.

Biography

Smita C. Pawar Assistant Professor (2004 - till date), former Head, Department of Genetics, Osmania University, Hyderabad, India, has more than eight years of experience in teaching, research and University administration. She is the recipient of CSIR/NET/UGC-JRF (2003) fellowship from Government of India. She worked in a reputed national research ICMR Institute "National Institute of Nutrition" as Junior Research Fellow (2003-2004). She was awarded the DST-ITS grant to present a research article in an international conference "BDC 2010" at Sydney, Australia. She has been awarded the BOYSCAST FELLOWSHIP by DST, Government of India for the year 2011-2012. She is currently Visiting Scientist at Department of Genetics, Cell Biology and Anatomy, University of Nebraska Medical Center, Omaha, NE, 68198, USA and Cell Signaling, Retinal and Angiogenesis Laboratory, Department of Genetics, Boys Town National Research Hospital, Omaha, NE 68131, USA. She is research supervisor and has two ongoing major research grants funded by UGC and DBT.