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5, 3'-dihydroxy-6, 7, 4'-trimethoxyflavanone exerts its anticancer and angiogenesis effects through regulation of the Akt/mTOR signaling pathway in human lung cancer cells

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5, 3'-dihydroxy-6, 7, 4'-trimethoxyflavanone (DHTMF) is one of the constituents of *Viex rotundifolia*, a medicinal herb that is used for the treatment of various disorders in China and Korea. In this study we evaluated the antitumor and anti-angiogenic activities of DHTMF. DHTMF significantly suppressed growth and induced apoptosis in lung carcinoma cells in a dose-dependent manner, as indicated by a decrease in Bcl-2 levels and increases in Bax and cleaved caspase-3 levels. In addition, DHTME treatment significantly reduced the phosphorylation of Akt and mammalian target of rapamycin (mTOR), accompanied by reductions in the protein level of hypoxia-inducible factor (HIF-1 α) and vascular endothelial growth factor (VEGF), which are key angiogenic molecules in H522 lung cancer cells. Furthermore DHTMF inhibited VEGF-induced angiogenesis, as indicated by reduced expression of CD34, tube formation and migration in human umbilical vein endothelial cells (HUVECs), as well as reduced neovascularization in an *in vivo* mouse Matrigel plug assay. DHTMF also inhibited phosphorylation of Akt, mTOR, and p70S6K in HUVECs and lung cancer cells. Taken together, our finding indicated that DHTMF inhibits Akt/mTOR signaling and reduces the expression of HIF-1 α and VEGF in tumor cells, which in turns inhibits endothelial cell-mediated angiogenesis. These results suggest that DHTMF inhibits angiogenesis as well as induces apoptosis via the Akt/mTOR pathway and might elicit pharmacological effects that are useful for treatment of lung cancer.

Biography

Ki Mo Kim has completed his PhD in 2003 from Kangwon National University in Korea, and Post-doctoral studies from Pittsburgh University School of Medicine. Currently, he is working as a Senior Researcher of Korean Institute of Oriental Medicine (KIOM). He has published more than 25 papers in reputed journals and has been focusing on "Natural herb-mediated chemoprevention effect and chemotherapy side effects mitigation".

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