Byung Woo Kim et al., J Proteomics Bioinform 2017, 10:12(Suppl)
DOI: 10.4172/0974-276X-C1-110

Anticancer activity of *Osmanthus matsumuranus* extract by inducing G2/M arrest and apoptosis

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Osmanthus matsumuranus, a species of Oleaceae, is found in East Asia and Southeast Asia. The bioactivities of *O. matsumuranus* have not yet been fully understood. Here, we studied on the molecular mechanisms underlying anticancer effect of ethanol extract of *O. matsumuranus* (EEOM). EEOM showed the cytotoxic activities in a dose-dependent manner in various cancer cell lines, but not in normal cells, and HepG2 cells were most susceptible to EEOM-induced cytotoxicity. EEOM induced G2/M arrest in HepG2 cells associated with decreased expression of cyclin-dependent kinase 1 (CDK1), cyclin A and cylcin B, and increased expression of phospho-checkpoint kinase 2, p53 and CDK inhibitor p21. Immunofluorescence staining showed that EEOM-treated HepG2 increased doublet nuclei and condensed actin, resulting in cell rounding. Furthermore, EEOM-mediated apoptosis was determined by Annexin V staining, chromatin condensation and DNA fragmentation. EEOM caused upregulation of FAS and Bax, activation of caspase-3, -8, -9, and fragmentation of poly ADP ribose polymerase. These results suggest that EEOM efficiently inhibits proliferation of HepG2 cells by inducing both G2/M arrest and apoptosis via intrinsic and extrinsic pathways, and EEOM may be a possible candidate for the anticancer drug development.

Recent Publications:

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2. Fulda S and Debatin K M (2006) Extrinsic versus intrinsic apoptosis pathways in anticancer chemotherapy. Oncogene. 25: 4798-4811.
3. Singh S, Singh P P, Roberts L R and Sanchez W (2014) Chemopreventive strategies in hepatocellular carcinoma. Nat. Rev. Gastroenterol. Hepatol. 11: 45-54.
4. Stewart Z A, Westfall M D, Pietenpol J A (2003) Cell-cycle dysregulation and anticancer therapy. Trends Pharmacol. Sci. 24: 139-145.
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Biography

Byung Woo Kim has completed his PhD in Pharmacology from Busan University, Busan, Republic of Korea. He is currently working as a Professor at Division of Applied Bioengineering, Biopharmaceutical Engineering Major, Dong-Eui University and as the Director of Blue-Bio Industry Regional Innovation Center, Dong-Eui University, Busan, Korea. His research field is Pharmaceutical biotechnology of natural Products.

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