

Pinus Roxburghii essential oil anticancer activity and chemical composition evaluation

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Abstract

The present study was conducted to appraise the anticancer activity of *Pinus roxburghii* essential oil along with chemical composition evaluation. MTT assay revealed cytotoxicity induction in colon, leukemia, multiple myeloma, pancreatic, head and neck and lung cancer cells exposed to essential oil. Cancer cell death was also observed through live/dead cell viability assay and FACS analysis. Apoptosis induced by essential oil was confirmed by cleavage of PARP and caspase-3 that suppressed the colony-forming ability of tumor cells and 50 % inhibition occurred at a dose of 25 μ g/mL. Moreover, essential oil inhibited the activation of inflammatory transcription factor NF- κ B and inhibited expression of NF- κ B regulated gene products linked to cell survival (survivin, c-FLIP, Bcl-2, Bcl-xL, c-Myc, c-IAP2), proliferation (Cyclin D1) and metastasis (MMP-9). *P. roxburghii* essential oil has considerable anticancer activity and could be used as anticancer agent, which needs further investigation to identify and purify the bioactive compounds followed by *in vivo* studies.

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