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Graviola: a novel promising natural-derived drug that inhibits tumorigenicity and metastasis of pancreatic cancer cells in vitro and in vivo through altering cell metabolism.

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Submitted by [María del Pilar Torres-González](#) [2] on 11 December 2013 - 4:28pm



[2]

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Authors	Torres, MP [3], Rachagani, S [4], Purohit, V [5], Pandey, P [6], Joshi, S [7], Moore, ED [8], Johansson, SL [9], Singh, PK [10], Ganti, AK [11], Batra, SK [12]
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Abstract	Pancreatic tumors are resistant to conventional chemotherapies. The present study was aimed at evaluating the potential of a novel plant-derived product as a therapeutic agent for pancreatic cancer (PC). The effects of an extract from the tropical tree <i>Annona Muricata</i>, commonly known as Graviola, was evaluated for cytotoxicity, cell metabolism, cancer-associated protein/gene expression, tumorigenicity, and metastatic properties of PC cells. Our experiments revealed that Graviola induced necrosis of PC cells by inhibiting cellular metabolism. The expression of molecules related to hypoxia and glycolysis in PC cells (i.e. HIF-1?, NF-?B, GLUT1, GLUT4, HKII, and LDHA) were downregulated in the presence of the extract. In vitro functional assays further confirmed the inhibition of tumorigenic properties of PC cells. Overall, the compounds that are naturally present in a Graviola extract inhibited multiple signaling pathways that regulate metabolism, cell cycle, survival, and metastatic properties in PC cells. Collectively, alterations in these parameters led to a decrease in tumorigenicity and metastasis of orthotopically implanted pancreatic tumors, indicating promising characteristics of the natural product against this lethal disease.
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