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Knockdown delta-5-desaturase promotes the formation of a novel free radical byproduct from COX-catalyzed ω -6 peroxidation to induce apoptosis and sensitize pancreatic cancer cells to chemotherapy drugs

Running Title: Knockdown D5D to inhibit pancreatic cancer growth

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ABSTRACT

Recent research has demonstrated that colon cancer cell proliferation can be suppressed in the cells that overexpress COX-2 via generating 8-hydroxyoctanoic acid (a free radical byproduct) during dihomo- γ -linolenic acid (DGLA, an ω -6 fatty acid) peroxidation from knocking down cellular delta-5-desaturase (D5D, the key enzyme for converting DGLA to the downstream ω -6, arachidonic acid). Here, this novel research finding is extended to pancreatic cancer growth, as COX-2 is also commonly overexpressed in pancreatic cancer. The pancreatic cancer cell line, BxPC-3 (with high COX-2 expression and mutated p53), was used to assess not only the inhibitory effects of the enhanced formation of 8-hydroxyoctanoic acid from cellular

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