Glycolytic enzyme inhibitors affect pancreatic cancer survival by modulating its signaling and energetics.

Department of Biomedical and Pharmaceutical Sciences, ISU Biomedical Research Institute, College of Pharmacy, Idaho State University, 921, South 8th Ave., Pocatello, Idaho 83209-8334, USA.

Abstract

BACKGROUND AND AIM: The importance of glycolysis in cancer cells is well documented. The effects of inhibiting glycolysis using metabolic inhibitors iodoacetate (IAA), an inhibitor of GAPDHase, and 3-bromopyruvate (3BP), an inhibitor of hexokinase-II, on survival and signaling of pancreatic cancer cells (Panc-1) were investigated.

MATERIALS AND METHODS: Cellular survival was evaluated using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Lactate dehydrogenase (LDH) assay was used to analyze the induced necrosis and protein levels were evaluated using Western blot analysis.

RESULTS: The results show that the inhibitors lowered cellular survival and increased cellular necrosis. Mitogenic signaling pathways were affected by 3BP but not by IAA.

CONCLUSION: We conclude that there may be a cross-talk between signaling pathways and glycolysis in regulating pancreatic cancer cell survival and signaling. Thus, a combination of agents that inhibit both energy production and cell signaling may provide a novel and effective approach to target pancreatic cancer effectively.

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