

Abstract Submitted
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Metabolic effects of the glucose analog 2-deoxy-glucose in cultured cancer cells probed by NMR spectroscopy¹ ASIYE ASAADZADE, LLOYD LUMATA, University of Texas at Dallas — 2-deoxy-D-glucose (2DG) is a glucose analogue that inhibits glycolysis and induce cell death due to formation via intracellular accumulation of 2-deoxy-d-glucose-6-phosphate (2-DG6P) and inhibition of the function of hexokinase and glucose-6-phosphate isomerase. In this work, we have investigated via carbon-13 nuclear magnetic resonance the effects of varying concentrations of 2DG on [U-¹³C] D-glucose metabolism in a variety of cultured cancer cells including renal cell carcinoma (Caki-1, A498, and 786-O), breast cancer (MCF-7), and glioblastoma (SfXL cells). Our results reveal that the metabolic production levels of downstream metabolites such as glutamate and acetate have been altered in addition to lactic acid production. Intra- and extra-cellular metabolic products of glucose metabolism will be discussed in light of glycolytic pathway disruption. This study is supported by the Welch Foundation grant AT-1877, DOD grants W81XWH-21-1-0176 and W81XWH-19-1-0741, CPRIT grant RP180716, and the UTD CoBRA and SPIRE grants.

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