Title: Effect of Telomerase inhibition on Hexokinase II expression and activity in Hepatocellular carcinoma

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Hepatocellular carcinoma (HCC) is the third leading cause of cancer deaths worldwide. Telomerase is almost universally required for cellular immortality and is expressed in 85% of cancers. Accumulating evidences suggest an extra-telomeric role of Telomerase in cellular processes and metabolism, including glycolysis. Glycolysis is an anaerobic pathway that generates ATP by oxidizing glucose. This pathway is highly activated in cancer cells, especially in rapidly growing tumors. The enzyme hexokinase II (HK II), that catalysis the first reaction of glycolysis, has attracted considerable attention because it commits glucose to catabolism and because it has been shown to be upregulated in various malignant tumors and cancer cell lines. The purpose of this study was to investigate the effect of Telomerase inhibition on Hexokinase expression and activity; and to assess the implication of Telomerase in glycolysis. In this report, we showed that the treatment of HCC cell line HepG2/C3A with Telomerase inhibitor BIBR-1532 (10 μM) decreased total and mitochondrial HK II activity. We further demonstrated that the 3-Bromopyruvate (3BP (20 μM)), 2-Deoxy-D-glucose (2DG (4 mM)) and Fructose (2 g/l) increased mRNA expression levels of Telomerase catalytic component (hTERT) and HK II. These results indicate that telomerase could be involved in glucose metabolism via HK II activity and expression level regulation.

Biography

Nadine Mahfouz is a PhD student in her second year of doctoral studies at the Saint Joseph University, Cancer and Metabolism Lab.