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The effects of oxygen levels on cancer cell metabolism DANIEL ANABLE, LLOYD LUMATA, University of Texas at Dallas — Hypoxia is a physiological condition that is detrimental to normal cells in which there is a lack of oxygen. Cancer cells however thrive even under hypoxic conditions. In this study, we have investigated the effects of total hypoxia (0% O2) and partial hypoxia (5% O2) vis-à-vis normoxia (20% O_2, normal oxygen conditions) on the metabolism of glucose in colo-205 colorectal cancer cells in vitro. In preliminary trials with two modular hypoxia chambers gassed with pure nitrogen gas and a 5% O2, 6% CO2, rest nitrogen mixed gas, we found a significant increase in lactate production at total hypoxia and a near negligible change at partial hypoxia. After 24 hours, the total hypoxia cells have nearly consumed all glucose and by 48 hours in the incubator, all glucose has been consumed which led to significant and consistent cell death, while the other two have an equivalent consumption rate. These preliminary NMR results will be discussed together with other supporting data. 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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