PROJECT RESUME

The ketone diet (KD) replaces glucose for ketone bodies as the primary brain fuel by reducing carbohydrate and increasing fat and protein intake. The diet is growing in popularity and many women of childbearing age are choosing the ketone diet for greater health and lifestyle benefitting results. Data is emerging to suggest that during pregnancy the KD results in foetal anatomical abnormalities, predicting organ dysfunction postnatally. The present study will evaluate the potential differentiation effects of β-hydroxybutyrate (a major ketone) supplementation on neural precursors and their subsequent lineage potentials during central nervous system (CNS) formation in a C57B6 mouse cell culture model. Vimentin, s100β and nestin are present on neural precursors. Upon differentiation to astrocytes, these proteins are down-regulated in exchange for increased expression of BLBP, GLAST and GFAP which are expressed on mature astrocytes. The study will examine expression of these and other biomarkers in an effort to observe phenotypic and cell cycle abnormalities and understand the mechanisms behind ketosis induced alterations in CNS cell proliferation. Our results will provide information to educate women and health professionals considering the KD during pregnancy.