485. (28) **TUMORIGENIC EFFECT MEDIATED BY FATTY ACID SYNTHASE IN A MURINE MAMMARY ADENOCARCINOMA MODELS FED WITH HIGH PALMITIC ACID AND FRUCTOSE DIET**

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Breast cancer (BC) is the first leading cause of mortality in women and is associated with genetic and epigenetic factors such as dietary compounds. The fatty acid synthase (FASN) is involved in de *novo* lipogenesis, catalyzing the synthesis of endogenous fatty acids. In early stages of carcinogenesis, the activation of FASN is mediated by hypoxia, which is induced by high concentrations of simple carbohydrates and fats. Its overexpression is associated with a poor prognosis, however, the dietary regulation of FASN in BC development is still unknown. The aim of this study was to evaluate the variation in dietary palmitic acid (PA) and fructose (Fr) on the regulation of FASN expression mediated by hypoxia in murine BC development. BALB/c mice (n=40) were divided in 4 dietary groups, CONTROL (6%corn oil+30%Fr), PCS (20%palm oil+15%Fr), PBA (20%corn oil+45%Fr) and PCS+PBA (20% palm oil+45%Fr). After 90 days mice were inoculated with murine breast adenocarcinoma LM3 cells ($1x10^6$cell). In this model we evaluated tumor volume (calimeter), lipid profile (gas chromatography, GC), FASN expression (Western Blot and immunohistochemistry) and tumor histology (H/E). In vitro model: cultured LM3 were treated with PA (40μM-50μM) and/or Fr (2.5μM) for 24hs. We evaluated viability (resazurin), apoptosis (Hoechst), lipid profile (GC), FASN expression. Three replicates were minimally performed by experiment and analyzed by ANOVA. The PCS presented the highest percentage of PA and the PBA, a high percentage of ω-6 PUFAs in membranes respect to the other groups. The PCS+PBA diet produced an increment in tumor growth, infiltration and necrosis. FASN expression was increased in this group as well as after PA and Fr (40/2.5uM) LM3 treatment ($p<0.05$).The PA and Fr (40/2.5uM) decreased LM3 apoptotic cells and PA 40μM increased cell viability ($p<0.05$). We demonstrated that diets high in PA and Fr induce tumor development in murine BC, mediated by an increment in FASN enzyme expression.