THE EFFECTS OF HIGH REFINED CARBOHYDRATE DIET AND THE PULMONARY INFLAMMATORY RESPONSE IN MICE EXPOSED TO CIGARETTE SMOKE

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INTRODUCTION AND OBJECTIVES: The intake of high refined carbohydrate diets (HRCD) has been associated with several pathological conditions. Cigarette smoke (CS) is an exogenous source of free radicals that cause cell dysfunction and cytotoxicity. Then, we evaluated the effects of a HRCD and the pulmonary inflammatory response in mice exposed to CS. MATERIALS AND METHODS: Twenty-four male mice C57BL/6 were separated into four groups: control diet (CG); control diet exposed to cigarette smoke (CSG); high refined carbohydrate diet (HCG); high refined carbohydrate diet exposed to cigarette smoke (HC+CS). Composed by 45% of standard chow, 45% of condensed milk and 10% of sugar, the diet was given for 12 weeks. Subsequently, CSG and HC+CS groups were exposed to CS for 5 days. All animals were euthanatized for the collection of bronchoalveolar lavage (BAL), lungs and adipose tissues for biochemical and biometric analyses. RESULTS AND CONCLUSIONS: We observed an increase of the body mass and body adiposity index (BAI) in HCG compared to other groups. The leukocytes increased in BAL of CSG compared to CG and of HC+CS compared to other groups. In addition, macrophages increased in HC+CS compared to CG and CSG, lymphocytes increased in HC+CS compared to other groups, and neutrophil increased in CSG and HC+CS compared to CG and HCG. The increase of the thiobarbituric acid reactive substances (U/mg ptn) and the superoxide dismutase concentrations (U/mg ptn) was observed in homogenized lung of HC+CS compared to other groups. The catalase activity (U/mg ptn) increased in HC+CS compared to CG. Regarding the inflammatory cytokines, we observed a decrease of interferon-γ in HCG and HC+CS compared to CG. Additionally, interleukin-10 has decreased in HC+CS compared to CG. Therefore, we conclude that the HRCD changed the biometric parameters, and their association with CS exposure changed the pulmonary inflammation and oxidative stress parameters. KEY WORDS: Obesity, Cigarette smoke, Inflammation. ACKNOWLEDGEMENTS: FAPEMIG, UFOP.