THE EFFECT OF HIGH FAT DIET AND INHALATION OF COAL ON MARKERS OF INFLAMMATION

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Introduction and objectives: Obesity is increasing in many countries and is a threat to the public health system in the world and the association with environmental pollution can be a trigger to increase inflammatory parameters. In Brazil about 11% of the generated electricity is produced by power plants fueled by coal. One of the greatest challenges in the environmental issue is the knowledge of the effects related to multiple doses and concentrations of the pollutants. So our main goal is to study the effects of high fat diet and inhalation on weight, intake and inflammatory markers.

Materials and methods: The animals (male Wistar rats) were divided into four groups of 8 animals. Low fat diet (LFD), LFD with inhalation, high fat diet (HFD) and HFD with inhalation. After five months on the diet the animals were subjected to inhalation for 28 days in an inhalation chamber. The coal concentration was 10 mg/m³ exposure during 3 hours a day. The food intake was monitored once a week and body weight twice a week. Cytokines IL-1β, TNF-α and HSP70 levels were quantified by indirect ELISA.

Results: Our results show a extremely significant difference in weight gain with different diets. The cytokines TNF-α and IL-1β had a extremely significant increase when compared to diets and a important increase compared to inhalation. We found a significant difference on HSP70 levels when compared to diets.

Conclusions: LFD animals had a higher food intake then HFD, however HFD was able to induce a weight increase, indicating that our HFD have a great capacity to induce obesity even it is ingested in minor proportions. Our diet methods had more evident modulation on inflammatory markers (IL-1β, TNF-α and HSP70) then in inhalation protocols.

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