STRAW CIGARETTE SMOKE: CHARACTERIZATION OF ITS COMPONENTS AND ITS EFFECT ON THE LUNG PARENCHYMA OF MICE CHRONICALLY EXPOSED.

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Background: Cigarette smoke is considered a major public health problem with high prevalence of morbidity and mortality. The effect of industry smoke cigarettes are well investigated, but are still lacking these observations from the straw cigarettes. Thus, the aim of this study was to characterize chemically and check the pulmonary toxicity in mice exposed to smoke straw cigarettes. Methods: It was analyzed smoke metallic compounds through the mass spectrometry (ICP-MS), thermal properties by Thermogravimetric Analysis (TGA) and the presence of hydrocarbons. Sixteen animals were divided into three groups: C (control group), SC (straw cigarettes) and IC (industrial cigarette, Marlboro) and exposed to cigarette smoke (12 cigarettes day, 3 x daily for 30 consecutive days) in a chamber appropriate monitoring. After 24 hours of the last exposure, the animals were euthanized, blood and lung were removed for histological and biochemical analysis. Results: The results showed that IC group had a higher prevalence of metal compared to the groups C and CT (As, Co, Cr, Fe, Mn, Ni, Pb and Se), with the largest differences to Se and Mn. Regarding to particulate matter, the SC group had higher concentration compared to IC group. In the lung tissue, it was observed alveolar destruction in the CI, SC groups while atelectasis only in the group CI and inflammatory influx only in the SC group and alterations in goblet cells were observed in the SC group. On the other hand, the oxidative modifications, GSH and NO levels were also investigated in the lung comparing both smoke cigarettes, showing the higher levels after exposure. Conclusion: Taken together these results suggested that straw cigarettes appear to be harmful as industrial cigarette, since the presence of toxic metals and organic compounds released into the smoke from the burning are largely absorbed by the respiratory system causing injury.

Key words: straw cigarette, industrial cigarette, metal ions, histology, oxidative stress.