

## Effects of Narghile Smoking in Tongue, Trachea and Lung

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**Abstract :** The effects that may be related to narghile smoking in the tissues of the oral cavity, trachea and lung and associated inflammation has been the question raised lately. The objective of this study was to identify histopathological changes and the presence of inflammation through the exposure of mice to narghile smoking through a whole-body study. The animals were divided in 4 groups with 5 animals in each group, being: one control group, one with 7 days of exposure, 15 days and the last one with 30 days. The animals were exposed to the conventional hookah smoke from Mizo brand with 0.5% percentage of unwashed tobacco and the EcOco brand coconut fiber having a dimension of 2cm × 2cm. The duration of the session was 30 minutes / day per 7, 15 and 30 days. The tobacco smoke concentration at which test animals were exposed was 35 ml every two seconds while the remaining 58 seconds were pure air. Afterward, the mice were sacrificed and submitted to histological evaluation through slices. It was found in the tongue of the 7-day group the presence in epithelium areas with acanthosis, hyperkeratosis and epithelial projections. In-depth, more intense inflammation was observed. All alteration processes increased significantly as the days of exposure increased. In trachea, with the 7-day group, there was a decrease in thickening of the pseudostratified epithelium and a slight decrease in lashes, giving rise to the metaplasia process, a process that was established in the 31-day sampling when the epithelium became stratified. In the conjunctive tissue, it was observed the presence of defense cells and formation of new vessels, evidencing the chronic inflammatory process, which decreased in the course of the samples due to the deposition of collagen fibers as seen in the 15 and 31 days groups. Among the structures of the lung, the study focused on the bronchioles and alveoli. From the 7-day group, intra-alveolar septum thickness increased, alveolar space decreased, inflammatory infiltrate with mononuclear and defense cells and new vessels formation were observed, increasing the number of red blood cells in the region. The results showed that with the passing of the days a progressive increase of the signs of changes in the region was observed, a factor that shows that narghile smoking stimulates alterations mainly in the alveoli (place where gas exchanges occur that should not present alterations) calling attention to the harmful and aggressive effect of narghile smoking. These data also highlighted the harmful effect of smoking, since the presence of acanthosis, hyperkeratosis, epithelial projections and inflammation evidences the cellular alteration process for the tongue tissue protection. Also, the narghile smoking stimulates both epithelial and inflammatory changes in the trachea, in addition to a process of metaplasia, a factor that reinforces the harmful effect and the carcinogenic potential of the narghile smoking.

**Keywords :** metaplasia, inflammation, pathological constriction, hyperkeratosis

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