

Poster Communication 38

Histopathological and inflammatory changes in oral mucosa associated with tobacco exposure: Preliminary findings from an ongoing comparative study

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Abstract

Background: Electronic cigarettes have been promoted as a safer alternative to conventional tobacco smoking. However, increasing evidence suggests that their aerosols contain nicotine and other potentially harmful substances that may induce oxidative stress, inflammation, and cellular damage in oral tissues [1]. Experimental studies have shown adverse effects on oral epithelial and connective tissue cells, including reduced cell viability, impaired wound healing, and dysregulated inflammatory responses [2]. In addition, e-cigarette exposure has been associated with tissue damage and molecular alterations potentially linked to carcinogenesis in the oral mucosa [3]. Nevertheless, histopathological and inflammatory evidence from human oral mucosal samples remains limited. **Objective:** To investigate and compare the histopathological and inflammatory profiles of oral mucosa samples obtained from individuals with different tobacco exposure backgrounds. **Methods:** An ongoing comparative cross-sectional study is being conducted across four groups: conventional tobacco smokers, e-cigarette users, non-smokers, and former smokers. Oral mucosa samples are being collected during routine dental implant procedures, in accordance with ethical approval and standardized protocols. A minimum of 10 participants per group is planned. Histopathological evaluation and immunohistochemical analysis are being performed to characterize tissue alterations and inflammatory marker expression, including CD3, CD20, CD163, MPO, and IL-6. **Results:** Preliminary qualitative immunohistochemical analysis revealed a trend toward a more prominent inflammatory profile in conventional tobacco smokers, characterized by more frequent expression of CD163, MPO, and IL-6. Control samples were predominantly negative for CD163 and MPO, with only occasional positivity for CD20 and IL-6, whereas former smokers exhibited generally low immunoreactivity. The single e-cigarette sample showed mild positivity for all evaluated markers; however, interpretation of this finding remains limited by the small sample size. **Conclusions:** Preliminary findings suggest that conventional tobacco exposure may be associated with a more prominent inflammatory profile in the oral mucosa. Given the limited number of e-cigarette samples available to date, further studies in larger and more balanced cohorts are needed to better characterize the histopathological and immunoinflammatory effects of different tobacco exposure patterns.

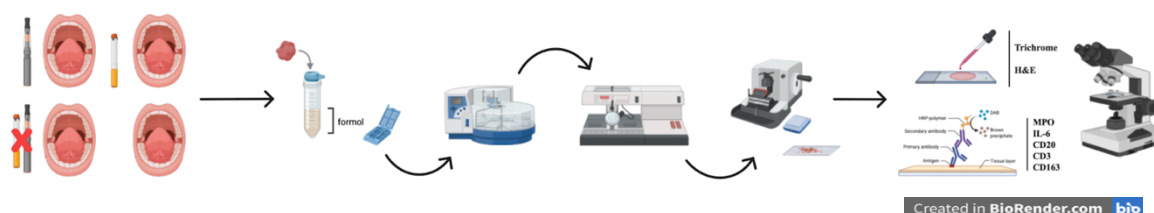


Figure 1. Workflow of histochemical and immunohistochemical procedures and optical microscopy analysis.

Keywords: smoking; electronic cigarettes; inflammation; buccal mucosa; immunohistochemistry

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