INFLAMMATORY PROFILE AND MUCIN PRODUCTION OF BRONCHIAL EPITHELIAL CELLS AS AN *IN VITRO* TOOL FOR EVALUATION OF RESPIRATORY SENSITIZERS

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Inhalation toxicity is traditionally evaluated using rodents, which can be submitted to different exposure schemes for assessment of acute, sub-acute and sub-chronic toxicity of a given test material. However, although such *in vivo* models are the only ones that have regulatory acceptance, these models only employ lethality as an endpoint for classification, while effects upon the respiratory system are poorly addressed. Moreover, there are no available methods for evaluation of pulmonary allergenicity since the Adverse Outcome Pathway (AOP) for lung sensitization remains incompletely understood, making it difficult the discernment between irritants and sensitizers. The objective of this work was to evaluate the inflammatory alterations triggered by different respiratory sensitizers upon bronchial epithelial cells (BEAS-2B), as well as its influence upon mucin (MUC1) expression. We selected seven respiratory allergens (Chloramine-T, Piperazine, Maleic Anhydride, Glutaraldehyde, Cyanuric Chloride, Trimetilic Anhydride Chloride and Trimetilic Anhydride) and evaluated the cytotoxicity using the MTT reduction assay. Further, we exposed these cells to the cell viability 80% concentration (CV_{80}) of each test material for 24 hours, prior to determination of pro-inflammatory (IL-1β, IL-6, IL-8, IL-12p70 and TNF-α) cytokines levels, using the Cytometric Bead Array (CBA) method in both cell lysates and supernatants. Furthermore, the MUC1 protein expression was addressed through flow cytometry. The results demonstrated that respiratory sensitizers promoted inflammatory alterations in BEAS-2B cells, where five chemicals increased significantly IL-8 production after exposure. Additionally, six respiratory allergens decreased significantly the MUC1 protein expression. Taken together, these results demonstrated the involvement of bronchial epithelial cells in the inflammatory alterations triggered by sensitizers upon the respiratory tract through the up-regulation of the chemoattractant IL-8, as wells as the decrease of anti-inflammatory signaling pathways due to MUC1 downregulation. These data contribute to both mechanistic comprehension and establishment of assessment tools for respiratory sensitization assessment regarding regulatory purposes.