Reviewer's report

Title: Inflammatory and cytotoxic effects of acrolein, nicotine, acetylaldehyde and cigarette smoke extract on human nasal epithelial cells

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Reviewer: Martin Liu

Reviewer's report:

The current study investigated effect of cigarette smoke component (acrolein, acetylaldehyde and nicotine) pretreatment on primary nasal epithelial cell (PNECs) survival and cytokine release, which was studied in comparison to the effect of cigarette smoke extract (CSE). The authors found that pretreatment with 10 and 30µM acrolein augmented IL-8 or IL-6 release by the PNECs in response to LPS stimulation, while same concentrations of nicotine inhibited but acetyladldehyde had no effect. Higher concentrations (50µM) of acrolein and nicotine resulted in apoptotic or necrotic cell death. They also found that 5% CSE not only stimulate IL-8 release, but also induced apoptosis through a mechanism of activating caspase-3 or necrosis. While this is an interesting study, there are comments as following.

Major Comment:

1. The authors cited a literature and provided concentrations of nicrotine and acrolein in the alveolar lining fluid in smokers are 30µM and 80µM, respectively, and thus, concentrations of 30µM nicotine or acrolein are reasonable in the current study. However, could the authors provide the concentration of acetylaldehyde in the smokers airway fluid? It had been reported that acrolein exerts its effect at micromolar range, but acetylaldehyde has biological effect at mili-molar range on the bronchial epithelial cells (Wang et al. Am J Respir Cell Mol Biol. 2001; 25: 772-9). If the in vivo acetylaldehyde concentration is higher than acroleine or nictoine, it would be worthy to examine higher concentration of acetylaldehyde effect on the cells.

2. The authors concluded that nicotine is immunosuppressive in PNEC cultures. To this reviewer, nicotine has anti-inflammatory effect rather than "immunosuppressive" effect.

Minor comment:

1. Figure 3, 4, 5 and 6, are not matching with figure legends.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests