

Inhaled ozone reactions with endogenous antioxidants and surfactants on the surface of lung lining liquid films

*Agustin J Colussi¹, Shinichi Enami²

1. California Institute of Technology, 2. National Institute for Environmental Studies, Tsukuba, Ibaraki 305-8506, Japan

We report the detection, via online electrospray ionization mass spectrometry, of the intermediates/products generated on the surface of surfactant protein B aqueous solutions exposed to gaseous ozone for 10 microseconds in the presence/absence of ascorbic acid/ascorbate as antioxidant. These experiments simulate how inhaled ozone reacts with typical components of the air-aqueous interface of human respiratory tract lining fluids. We found dramatic changes in the species detected at pathological acidic pH ~4 vs normal physiological pH 7 conditions. We will provide clues on the identity of the species generated in each case and on their mechanisms of formation. We will discuss the implications of our findings on the adverse health effects induced in healthy and diseased subjects.

Keywords: Inhaled ozone, Surfactant protein B, Health effects of air pollution on healthy and diseased subjects