

# **RESPIRATORY TRACT LINING FLUID ANTIOXIDANTS: THE FIRST LINE OF DEFENCE AGAINST GASEOUS POLLUTANTS**

**F. J. Kelly, M. Cotgrove, I. S. Mudway**

Cardiovascular Research, The Rayne Institute, St Thomas' Hospital, London, U. K.

## **SUMMARY**

All tissues are vulnerable to oxidant damage, but by virtue of its location, anatomy and function, the epithelial surface of the lung is one of the most vulnerable targets in the body. Recent studies have shown that epithelial lining fluid (ELF), a thin layer of fluid which covers the epithelial surface of the respiratory tract, contains an interesting complement of antioxidants, some of which, like glutathione, are present in concentrations much higher than those found in plasma. It is likely that ELF forms the first line of defence against inhaled toxins such as ozone and nitrogen dioxide. By employing an *ex vivo* exposure system we have demonstrated that when lung lining fluid is in contact with environmentally relevant concentrations of ozone or nitrogen dioxide, there is differential consumption of the water-soluble antioxidants in the order, uric acid > ascorbic acid >> glutathione. Given that the majority of ozone and nitrogen dioxide reacts within the ELF compartment, the antioxidant composition of this fluid is critically important in determining an individuals' sensitivity to gaseous pollutants.

*Key words:* nitrogen dioxide, ozone, epithelial lining fluid, antioxidants

Address for correspondence: Frank J. Kelly, Cardiovascular Research, The Rayne Institute, St Thomas' Hospital, London, SE1 7EH, U. K.