

# RAGE Expression in Nitrogen Mustard Induced Acute Lung Injury in the Rat

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Nitrogen Mustard (NM) is a chemical warfare agent that is known to cause damage to the respiratory tract. It is a bifunctional alkylating agent that acts as a vesicant or blistering agent. The receptor for advanced glycation endproducts (RAGE) is a pattern recognition receptor that binds to ligands such as high mobility group box-1 protein (HMGB1) to promote a pro-inflammatory response. RAGE has been shown to be a mediator in inflammatory lung diseases, such as asthma and acute respiratory distress syndrome (ARDS). Since mustard-induced lung injury is associated with marked inflammatory response, we determined if RAGE plays role in the process. Male Wistar rats were treated intratracheally with PBS or NM (0.125 mg/kg); rats were euthanized 3 days later and bronchoalveolar lavage fluid (BAL) and lung tissue collected. Significant increases in expression of RAGE and HMGB1 were detected in BAL from NM exposed rats when compared to PBS treated controls. In the lung, expression of both RAGE and HMGB1 was highly induced in alveolar epithelial cells and macrophages. These findings suggest that RAGE and HMGB1 may play role in regulating mustard induced lung inflammation and injury. Understanding mechanisms of vesicant injury may help to develop novel strategies to counter toxic effects of mustard exposure.

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