Study shows that augmenting a gas naturally in our bodies fights RSV infection

27 April 2015

The study was lead by UTMB's Dr. Antonella Casola, pediatric infectious diseases expert. Credit: The University of Texas Medical Branch at Galveston

A new study from the University of Texas Medical Branch at Galveston is the first to show that hydrogen sulfide, a gas produced naturally within our bodies, reduces the severity of respiratory syncytial virus, or RSV. When someone has a RSV infection, his or her body is less able to produce the protective hydrogen sulfide. The UTMB study found that a drug that triggers a steady release of this gas decreases the virus's ability to multiply and reduces inflammation of the airways.

RSV causes a cold-like infection in healthy adults but can make infants, older adults and people who have weak immune systems dangerously ill. RSV is a major cause of both upper and lower respiratory tract infections in children. After decades of intensive research, there is no vaccine or effective treatment available for RSV or related respiratory viral infections.

Hydrogen sulfide is a gaseous mediator produced naturally within our bodies that is gaining attention as a key player in both healthy respiratory system function and the changes that lead to respiratory diseases including chronic obstructive pulmonary disease and asthma.

To address the role of the gas in modifying the severity of RSV infection, the researchers used a model of RSV infection using the tissue that lines the airway, which is the area of the body most vulnerable to this infection. These findings are currently available in the *Journal of Virology*.

They found that RSV infection reduced the ability of the airway tissue cells to generate hydrogen sulfide and increased its breakdown. The researchers also found that blunting production of the gas increased the number of virus particles and the release of mediators that cause inflammation of the airway tissue.

In contrast, providing a drug that triggers a steady release of the gas, referred to as H2S, blocked RSV viral replication and inflammation.

"This study shows that H2S can reduce viral replication and pro-inflammatory gene expression, both important components of lung injury in respiratory viral infections," said UTMB's Dr. Antonella Casola, lead author and pediatric infectious diseases expert. "This treatment has the potential to help patients with RSV and can be rapidly translated into novel treatment approaches for viral bronchiolitis and pneumonia."

Provided by University of Texas Medical Branch at Galveston