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Common cholesterol drug greatly alters inflammatory response to common cold

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Cold season may be just behind us, but a new discovery may shed light on how this common condition triggers asthma attacks. In a new research report published in the June 2014 issue of the *Journal of Leukocyte Biology*, researchers show that in individuals with asthma, statins significantly reduce the in vitro inflammatory response of human monocytes to rhinovirus (RV), the cause of the common cold. Not only does this discovery suggest that statins could help prevent or reduce the severity of asthma symptoms resulting from colds, but may also open the doors to further research into novel ways of controlling asthma attacks.

"Our findings—that statins reduce rhinovirus-induced CXCL10 secretion from human monocytic cells—suggest that these frequently prescribed drugs may affect asthma exacerbations caused by the common cold in adults," said Lisa E. Wickert, Ph.D., a researcher involved in the work from the Department of Biomolecular Chemistry and Nutritional Sciences at the University of Wisconsin-Madison in Madison, Wisconsin. "We hope that these findings will provide motivation to study how statins not only affect asthma symptoms but more specifically viral-induced asthma exacerbations."

To make their discovery, the researchers isolated human blood monocytes and lung macrophages from patients with allergies and/or asthma and treated the cells with simvastatin, a commonly prescribed statin drug. The cells were then stimulated with three different human RV strains. Researchers compared the inflammatory response of control-treated versus simvastatin-treated cells to RV by measuring CXCL10

secretion, an implicated therapeutic target for virus-induced asthma exacerbations. They found that CXCL10 secretion was lower from simvastatin-treated monocytic cells than in control-treated monocytic cells. In individuals with asthma, statins may modulate the immune response to rhinovirus, which can potentially affect the risk of a viral-induced asthma exacerbation.

"Not only does this report shed light on how colds exacerbate asthma, it also suggests new pathways and existing drugs that might be exploited to limit this, in some cases, severe combination of respiratory events," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*, "These findings also highlight an emerging appreciation for the interaction between metabolic pathways and the immune system."

More information: Lisa E. Wickert, Maya R. Karta, Anjon Audhya, James E. Gern, and Paul J. Bertics. Simvastatin attenuates rhinovirus-induced interferon and CXCL10 secretion from monocytic cells in vitro. *J. Leukoc. Biol.* June 2014, 95:951-959; DOI: 10.1189/jlb.0713413