

**MedicalResearch.com Interview with:**

**Katarzyna Niespodziana, PhD and Rudolf Valenta, MD**

Division of Immunopathology, Department of Pathophysiology and Allergy Research,  
Medical University of Vienna, Austria

***What is the background for this study? What are the main findings?***

Infections with the common cold virus (Rhinovirus, RV) are in fact a major trigger factor for acute exacerbations of asthma and COPD (chronic obstructive pulmonary disease). An attack can also lead to the worsening of the underlying disease. In previous studies we have found that although the human body produces antibodies against rhinoviruses, these are not directed against the surface structures on the virus which the virus uses to infect host cells and therefore do not protect against infection. In the framework of the EU project "Predicta", we have collaborated with investigators from London and published in EBioMedicine a novel study which shows for the first time that increases of antibodies against a portion of the rhinovirus coat protein VP1 might be strain-specific surrogate markers for the severity of rhinovirus-induced respiratory symptoms. In this work, asthma patients and healthy subjects were infected with the rhinovirus under controlled conditions. Results of the subsequent antibody tests with recombinant virus antigens showed that the asthmatics that experienced the most severe respiratory symptoms upon infections produced significantly higher antibodies to a part of the structure protein VP1, than any of the subjects with mild or no symptoms.

***What should clinicians and patients take away from your report?***

No cure against common cold exists currently and so far no vaccine has been produced. Until now, it has been only possible to detect the presence of the rhinovirus in subjects with suspected infections but no serological blood test was available to proof that an infection has indeed occurred. In this current study, we were able to show that increases of antibody responses towards a specific part of the coat protein VP1 are suitable as a diagnostic marker and also as a tool for identifying the disease-triggering strains. Thus, measuring the antibody responses to VP1 may allow identifying subjects who experienced exacerbations of asthma due to rhinovirus infections. Once the culprit rhinovirus strains involved in rhinovirus-induced asthma exacerbations are identified, it might be possible to design vaccines for individuals who are in need of such vaccines.

***What recommendations do you have for future research as a result of this study?***

Our findings clearly indicate that it may be possible to use portions of the VP1 coat proteins in simple blood tests to identify the most common and clinically relevant rhinovirus strains involved in acute asthma attacks. With such a diagnostic tool it becomes possible to investigate the role of rhinovirus infections in asthma and other respiratory diseases, in different geographic populations and age groups including not only children but also adults and elderly persons. Furthermore, longitudinal studies will allow studying possible variations of the culprit rhinovirus strains and, finally define the elements needed for an effective rhinovirus vaccine.

**Reference:**

Niespodziana, K., Cabauatan, C., Jackson D. J., Gallerano, D., Trujillo-Torralbo, B., del Rosario, A., Mallia, P., Valenta R., and Johnston S.L. Rhinovirus-induced VP1-specific Antibodies are Group-specific and Associated With Severity of Respiratory Symptoms, *EBioMedicine* (2014), <http://dx.doi.org/10.1016/j.ebiom.2014.11.012>.