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Title: Reduced expression of interferon stimulated genes in refractory asthma

Dr. Jane 14987 da Silva janedasilva1808@gmail.com MD ¹, Mrs. Monique 14988 Henket Monimoniquehenket@hotmail.com ², Mr. Michael 15071 Edwards michael.edwards@imperial.ac.uk ³, Prof. Dr Sebastian 15082 Johnston Sebastians.johnston@imperial.ac.uk ³ and Prof. Dr Renaud 15083 Louis r.louis@chu.ulg.ac.be ². ¹ Department of Medicine and Post-Graduate Program in Health Science, University of South of Santa Catarina - UNISUL, Tubarao, SC, Brazil, 88137-270 ; ² Department of Pneumology, GIGA I 3 Research group, CHU, University of Liege, Liege, Belgium, 4000 and ³ Department of Respiratory Medicine, National Heart and Lung Institute, Imperial College, London, United Kingdom, W2 1NY .

Body: Introduction: Patients with refractory asthma are more susceptible to allergen- and infection-induced exacerbations. This susceptibility is poorly understood, but it may be related to an inefficient activation of innate host defence pathways. Interferon-stimulated genes (ISGs), such as myxovirus resistance (MX1), 2'5'-oligoadenylate synthetase (OAS) and viperin are associated to biological activities, including antiviral, antiproliferative, and proapoptotic effects. Objective: The aim of the study was investigate the expression of antiviral genes in patients with refractory compared with moderate and mild asthma. Methods: The mRNA expression of the ISGs (MX1, OAS and viperin), interferon (IFN) type I (β) and type III (IL-28 and IL-29) were measured by RTq-PCR in cells of induced sputum from 19 healthy subjects, 19 mild, 22 moderate and 22 refractory asthmatics. Results: The mRNA expression of Mx1 and viperin was significantly reduced in refractory asthmatics ($p=0,04$ and $p= 0,03$, respectively), while the mRNA expression of OAS, IFN β , IL-28 and IL-29 was not different between groups. Conclusion: The results point to a deficient innate immune response in refractory asthmatics demonstrated by a decreased expression of some interferon stimulated genes.