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**Title:** T cells in peripheral blood during viral acute exacerbation of COPD

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**Body:** Introduction: Exacerbations in COPD patients increase premature mortality. The main cause of AECOPD are viral infections however, the type of predominant cellular immune response is unknown. Objective: To quantify the T cell subpopulations in peripheral blood of patients with viral AECOPD and compare them with patients in a stable disease (COPD) and healthy controls (HC). Methods: We included 82 patients from the Cohort of COPD Clinic, between May 2009 and December 2011, 49 of them were exacerbated and we included 19 HC. Viral diagnosis was performed by using real-time PCR and we used flow cytometry to determine T-cell subpopulations. Differences between groups were evaluated by Kruskal-Wallis and we performed a post-hoc U-Mann-Whitney test. Results: 26 patients (53%) had a viral exacerbation (Influenza A 54%, Coronavirus 14%, Influenza B 7%, RSV 7%, H1N1 7%, MPV 4%). In these patients predominated the Th1 response 8.6(6.2-11) versus COPD 2.5(1.3-4.29) and HC 1.1(0.8-1.4)  $p<0.0001$ . The TCD8 response has a predominance of Tc17 AECOPD 11.2(7.1-13), COPD 2.8(1.9-4.2) and HC 1.0(0.5-2.2)  $p<0.0001$  and Tc1 AECOPD 7.6(4.1-10), COPD 1.7(1.1-2.8), HC 1.1(0.8-1.2)  $p<0.0001$ .

**Conclusions:** Our data show a polarization Th1, Tc1, Tc2 and Tc17 in AECOPD patients suggesting the involvement of these populations in the cellular immune response during viral infections. We did not find a higher prevalence of H1N1 infections in patients in the cohort.