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Title: Differences in volatile organic compounds (VOC) determined in exhaled breath in two populations of lung cancer (LC): With and without COPD

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Body: Tobacco smoke exposure is the main risk factor for the development of LC and COPD. In turn, COPD is a risk factor for the development of LC. Tobacco smoke contains a large number of free radicals, reactive oxygen species and reactive nitrogen species that increase oxidative stress. Damage to membrane lipids (lipid peroxidation) produces different VOC (aldehydes, carboxylic acids, etc.) that can be detected in exhaled breath. OBJETIVE: To determine whether there are differences between exhaled VOC in lung cancer patients with and without COPD. METHODS: Case-control study. 81 patients with LC (57 with COPD and 24without COPD). Informed consent accepted. Chemical analysis: Thermal Desorption/ Gas Chromatography-Mass Spectrometry (Markes-Agilent Tech).Statistical analysis: SPSS®v-15 for Windows. RESULTS: Description of the sample. Quantitative and qualitative study of VOC.

We observed statistically significant low concentrations of propanoic acid in lung cancer patients without COPD in comparison to those with COPD. CONCLUSSIONS: 1. 70% of LC patients have associated to COPD. 2. Propanoic acid shows statistical significance difference. 3. Indeed, the probability to find propanoic acid in LC with COPD patients isn't high: this VOC was not exhaled in 85% of LC without COPD patients. Supported by FIS: PI07/1116; Neumomadrid 2008, SEPAR 2009/881; Neumomadrid 2012.