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Title: Discrimination of bronchial inflammatory phenotype of asthmatic patients by using the electronic nose

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Body: Identifying the inflammatory phenotype of asthmatic patients requires a time-consuming methodology, personnel and technical resources. The electronic nose is a device capable of detecting volatile organic compounds (VOCs) present in the gas phase of human respiration. Objectives: To compare the profiles of VOCs in the air exhaled by the electronic nose with bronchial inflammatory phenotypes of asthma who attend outpatient. Methods: A total of 44 asthmatic patients were included (16 with eosinophilic asthma, 8 with neutrophilic asthma and 20 with paucigranulocytic asthma). All patients underwent the same day of the visit an: induced sputum, pulmonary function studies and fractional exhaled nitric oxide. Asthmatic patients were classified as induced sputum cellularity (inflammatory profile). The determination of VOCs in the exhaled air is conducted through an electronic nose Cyranose 320 (Smith Detections, Pasadena, CA) according to the method described by Dragonieri S, et al. The breathprints produced by the electronic nose is mathematically analyzed by logarithmic regression, represented unilaterally and bidimensional for further analysis and interpretation. Results: Descriptive analysis intergroup and between categorical variables was not significant. The electronic nose was able to discriminate correctly by 100% to asthmatic eosinophilic vs. neutrophilic and eosinophilic vs paucigranulocytic asthma and 90% recall rate when comparing neutrophilic vs paucigranulocytic asthma. Conclusion: The results indicate that the electronic nose is a noninvasive method that allows discriminate the different inflammatory phenotypes of asthma especially those with a "eosinophilic asthma."