

European Respiratory Society Annual Congress 2012

Abstract Number: 7107

Publication Number: P2533

Abstract Group: 10.1. Respiratory Infections

Keyword 1: Experimental approaches **Keyword 2:** Infections **Keyword 3:** Public health

Title: Distinct bacterial species: Escherichia coli and staphylococcus aureus have specific microcalorimetric patterns

Dr. Alexandru 1657 Steriade alex.steriade@gmail.com MD ¹, Dr. Dragos 1663 Zaharia zahariadragoscosmin@gmail.com MD ¹, Mr. Alexandru 1664 Muntean muntean.alex@gmail.com ¹, Mr. Octavian 1665 Balint octavianbalint@yahoo.co.uk ¹, Prof. Dr Miron 1666 Bogdan miron_a_bogdan@yahoo.com MD ¹, Prof. Dr Mircea 1692 Popa mircea_ioan_popa@yahoo.com MD ² and Dr. Vlad 1693 Popa vtpopa@gmail.com ³. ¹ Pneumology, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania ; ² Microbiology, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania and ³ Biocalorimetry laboratory, Institute of Physical Chemistry "Ilie Murgulescu", Bucharest, Romania .

Body: Premise: Microcalorimetry represents a method through which micro heat variations of bacterial cultures can be recorded, in a form of a heatflow-time curve. Objective: Our research aimed to identify the similarities and differences in bacterial microcalorimetric growth patterns of 2 distinct bacterial species. Material and method: Series of experiments were conducted for E.Coli (15 experiments) as well as for S.Aureus (13 experiments) and the obtained thermograms were then compared. Several heatflow curve parameters were identified and then used for comparison. Results: The obtained microcalorimetric curves present 2 peaks, each curve providing different recorded parameters. After data analysis, we identified a set of parameters of thermograms that can be used to objectively differentiate the 2 species (with differences being statistically significant). In our opinion, these parameters could allow a primary microcalorimetric characterization of the bacterial growth. Furthermore, by using this method, identification of bacterial species could be possible in the near future. The following parameters were defined: Time (h) to first peak, time to second peak, time to bacterial growth signal detection, time to bacterial growth signal loss, max first peak height, max second peak height. Conclusion: Microcalorimetry represents a method which could be used to differentiate 2 bacterial species and maybe even to identify bacteria. Provided with a high sensibility in detecting bacterial presence, it could offer real time information regarding the characteristics of the bacterial population (antibiotic susceptibility).