

ORAL PRESENTATION

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Assessment of bacteriophage activity against local strains of *Enterococcus* and *Pseudomonas* in Romania

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From The 10th Edition of the Scientific Days of the National Institute for Infectious Diseases “Prof Dr Matei Bals”

Bucharest, Romania. 15-17 October 2014

Background

Enterococcus faecium and *Pseudomonas aeruginosa* are part of the ESCAPE pathogens, which have the ability to “escape” the currently available therapeutic options. For these germs alternatives are needed, as is the case of bacteriophage treatment.

Methods

In this study we used a bacteriophage testing kit containing 4 types of Georgian products: PYO, INTESTI (Eliava BioPreparations, Tbilisi) and PHAGYO, PHAGESTI (JSC “Biochimpharm”, Tbilisi) to test the strains of *Pseudomonas* spp. and *Enterococcus* spp. isolated and stored from patients treated in the Adults II ward of the National Institute for Infectious Diseases “Prof. Dr. Matei Balș”, Romania during April 2013 – July 2014.

Results

We identified 9 strains of *Enterococcus* (7 *E. faecalis*, 1 *E. avium* and 1 *E. faecium*) and 9 strains of *Pseudomonas aeruginosa*. The strains had been isolated mostly from cutaneous wounds (3/9) for *Enterococcus* spp. and from urine (5/9) for *P. aeruginosa*. For *Enterococcus* spp. the rate of susceptibility to PYO phages was 33.33% (3/9), to INTESTI 55.56% (5/9), to PHAGYO 44.44% (4/9) and to PHAGESTI 0% (0/9). We tested the *Enterococcus* ATCC, and it displayed susceptibility to PYO, INTESTI and PHAGYO.

For *Pseudomonas* spp. the rate of susceptibility to PYO phages was of 66.67% (6/9), INTESTI 88.89% (8/9), PHAGYO 55.56% (5/9), PHAGESTI 44.44% (4/9). We tested the *Pseudomonas* ATCC, and it displayed susceptibility to all the bacteriophage products tested.

Performing the ANOVA test for *Enterococcus* spp. we identified a statistically significant correlation between susceptibility to ampicillin vs. PYO phages ($p = 0.034$) and vs. INTESTI phages ($p = 0.024$). For *P. aeruginosa* a correlation was identified between susceptibility to ceftazidime and PYO phages ($p = 0.029$).

Conclusion

Despite the fact that PYO and PHAGYO do not contain phages for *Enterococcus* spp., their activity against it was similar to that of INTESTI. PYO and PHAGYO showed activity on *Enterococcus* ATCC, too. For *P. aeruginosa* the rate of susceptibility was very high for phages, and quite low for almost all antibiotics tested. We intend to develop further studies for testing a higher number of strains and for assessing a potential synergy for co-administration of antibiotics and bacteriophages.

Acknowledgements

1. This paper is partly supported by the Sectorial Operational Programme Human Resources Development (SOPHRD), financed by the European Social Fund and the Romanian Government under the contract number POSDRU 141531.

2. This paper is partly supported by the Carol Davila University of Medicine and Pharmacy, Young Researchers Grant, no 28341/2013.

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Published: 15 October 2014

doi:10.1186/1471-2334-14-S7-O19

Cite this article as: Neguț *et al.*: Assessment of bacteriophage activity against local strains of *Enterococcus* and *Pseudomonas* in Romania. *BMC Infectious Diseases* 2014 **14**(Suppl 7):O19.

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