



ESCMID Global

Abstract Book 2024

34th Congress of the European
Society of Clinical Microbiology
and Infectious Diseases

Barcelona, Spain
27 – 30 April 2024
























CMI Communications



journal homepage: <https://www.sciencedirect.com/journal/cmi-communications>

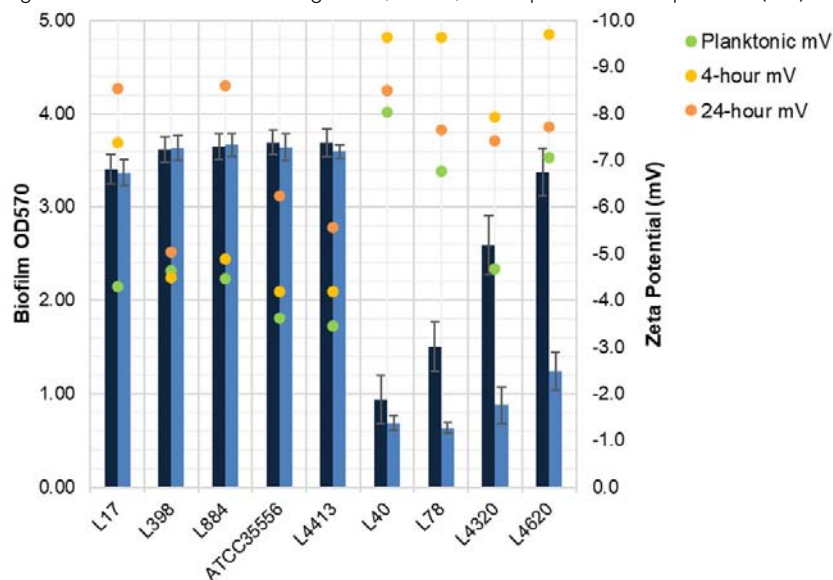
Table of Contents

4	Welcome Address	
6	ESCMID Global Programme Committee	
7	Abstract Reviewers	
13	Abstract Categories	
15	Abstracts	
15	1. Viral infection & disease (incl COVID-19)	
647	2. Bacterial infection & disease	
1365	3. Bacterial susceptibility & resistance	
2085	4. Diagnostic microbiology	
2442	5. New antibacterial agents, PK/PD & Stewardship	
3017	6. Fungal infection & disease	
3298	7. Parasitic diseases & global health	
3470	8. Healthcare-associated infections, infection prevention & control	
3844	9. Experimental microbiology, microbial pathogenesis & biofilms	
4080	10. Immunology, immune compromise & vaccinology	
4291	11. Other	
4390	12. Case reports and case series (n<10)	
4733	13. Late breakers	
4837	ESCMID Global 2024 Abstract Authors	

Publication of this abstract supplement has been supported by ESCMID

Disclaimer: The abstracts are presented here as they were submitted for inclusion in the proceedings of the 34th European Congress of Clinical Microbiology and Infectious Diseases. Outside of page layout and formatting, only the abstract titles have been proofed and edited by ESCMID. All content entirely represents the work of the submitting author(s), and does not reflect the views of ESCMID, its staff, or its executive. ESCMID does not take responsibility for misspellings or misrepresentation of registered names, copyrights or trademarks.

Figure 2. 24-hour mature biofilm growth (OD570) in comparison to zeta potential (mV) at all time points



References

- Lee JM, Lim DS, Jeon SH, Hur DH. Zeta Potentials of Magnetite Particles and Alloy 690 Surfaces in Alkaline Solutions. *Materials* (Basel). 2020 Sep 9;13(18):3999. doi: 10.3390/ma13183999. PMID: 32917041
- Shnoudeh AJ, Hamad I, Abdo RW, Qadumii L, Jaber AY, Surchi HS, Alkelany SZ. Synthesis, characterization, and applications of metal nanoparticles. In *Biomaterials and bionanotechnology 2019* Jan 1 (pp. 527-612). Academic Press.
- Kaszuba M, et al., High-concentration zeta potential measurements using light-scattering techniques. *Philos Trans A Math Phys Eng Sci*, 2010. 368(1927): p. 4439-51.
- Kinnari, T.J., et al., Influence of surface porosity and pH on bacterial adherence to hydroxyapatite and biphasic calcium phosphate bioceramics. *J Med Microbiol*, 2009. 58(Pt 1): p. 132-137.
- Perry, R.B., Principles of Colloid and Surface Chemistry, Second Edition (Hiemenz, P. C.). *Journal of Chemical Education*, 1987. 64(12): p. A328.
- Rawlinson, L.B., et al., Resistance of *Staphylococcus aureus* to the cationic antimicrobial agent poly(2-(dimethylamino ethyl)methacrylate) (pDMAEMA) is influenced by cell-surface charge and hydrophobicity. *J Med Microbiol*, 2011. 60(Pt 7): p. 968-976.
- Stepanović S, Vuković D, Dakić I, Savić B, Švabić-Vlahović M. A modified microtiter-plate test for quantification of staphylococcal biofilm formation. *Journal of microbiological methods*. 2000 Apr 1;40(2):175-9.

P3584 | 00981

Determination of multidrug-resistant *Proteus mirabilis* biofilm formation ability of urinary infection in pregnant women

M. Mishyna¹, Y. Mishyn¹, Y. Mozgova¹, S. Malanchuk²

¹Kharkiv National Medical University - Kharkiv (Ukraine), ²V. N. Karazin Kharkiv National University - Kharkiv (Ukraine)

Presenting author email: mishina1969mmm@gmail.com

Background

Chronic urinary inflammatory in pregnant women is a current global problem, as they may lead to kidneys' pathology in fetus and newborn. The aim was to study stages of biofilm formation by *P.mirabilis* in a comparison with the development of morpho-functional changes in kidneys.

Methods

Identification of isolates was carried out using MICRO-LA-TEST, the ability to form biofilms was determined in polystyrol Petri dishes (d 40 mm). Optical, phase-contrast, scanning and luminescent microscopy were used for visualization. The urogenital *P.mirabilis* infection was modeled on laboratory female rats to study biofilms' formation *in vivo*.

Results

25 clinical multidrug-resistant strains of *P.mirabilis* were isolated from pregnant women. After 2 hours of cultivation, the adhesion of bacterial cells was observed that correlates with the high adhesion index (7.5). In 24-36 hours, monolayer formation with biofilms' compacted areas was revealed. Microcolonies formation was ensured by co-aggregation with intercellular connections' formation, their fusion with subsequent clustering. The most complete biofilm development was observed in microcolonies' central part. Cellular matrix destructive processes with the subsequent separation of planktonic cells and new colonies formation were detected in some areas in 48 hours. Under luminescence microscopy (Live/Dead staining), green metabolically active cells - viable forms and red non-viable cells - were differentiated. Under static conditions, phase-contrast microscopy of *P.mirabilis* revealed motile cells that form aggregations, initiating biofilm formation, but do not contribute to the increase in the biomass of mature one. Morphological examination revealed the development of pathological processes in rats' kidneys. Most of the nuclei were reduced in size; microabscesses were noted in cortical and medullary layers' parenchyma. Congestive hemorrhagic infarction and necrosis of tubule epithelium, inflammatory hyperemia of vessels with leukocyte infiltration of necrotic areas were revealed. Tubules and capsules of glomeruli were filled with leukocytes, lumens did not differ due to the breakdown of the epithelium.

Conclusions

Exopolysaccharides' biosynthesis is a multistage process that leads to changes in bacterial phenotypic features compared to their planktonic forms and development of morpho-functional changes in kidneys characteristic for certain stages of biofilm formation.