Bolnička otpadna voda kao put prijenosa višestruko rezistentnih mikroorganizama

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Korčula, 3.-6. 10. 2017.

UVOD

- Pojava višestruko rezistentnih bakterije (MDR –*multi drug resistant*) globalni problem 21. st.
- Osobito zabrinjavajući razvoj rezistencije na **karbapeneme**

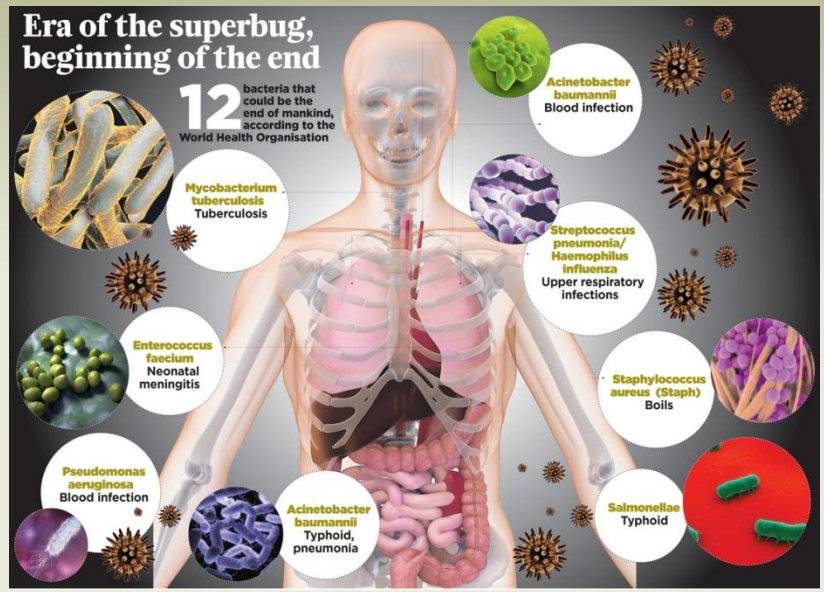
World Health Organization

Media centre

WHO publishes list of bacteria for which new antibiotics are urgently needed

News release

27 FEBRUARY 2017 | GENEVA - WHO today published its first ever list of antibiotic-resistant "priority pathogens" – a catalogue of 12 families of bacteria that pose the greatest threat to human health.



The WHO priority list

PRIORITY: CRITICAL	PRIORITY 2: HIGH	PRIORITY 3: MEDIUM
Acinetobacter baumannii carbapenem-resistant	**Enterococcus faecium** vancomycin-resistant	**Streptococcus pneumoniae** penicillin-non-susceptible
Pseudomonas aeruginosa carbapenem-resistant	**Staphylococcus aureus** methicillin-resistant vancomycin-intermediate and resistant	**Haemophilus influenzae** ampicillin-resistant
Enterobacteriaceae carbapenem-resistant, ESBL-producing	**Helicobacter pylori** clarithromycin-resistant	**Shigella spp.** fluoroquinolone-resistant
	Campylobacter spp. fluoroquinolone-resistant	
	Salmonellae fluoroquinolone-resistant	
	Neisseria gonorrhoeae cephalosporin-resistant fluoroquinolone-resistant	

Source: WHO

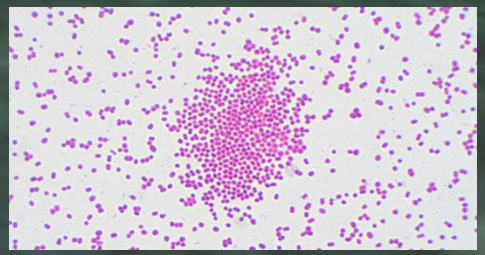
ALARMANTNO UPOZORENJE

OVIH 12 BAKTERIJA PREDSTAVLJAJU NAJVEĆU OPASNOST ZA LJUDSKO ZDRAVLJE Smrtonosnije su od raka, godišnje bi mogle ubijati po deset milijuna ljudi

AUTOR: Jutarnji.hr OBJAVLJENO: 02.03.2017. u 10:55

Acinetobacter baumannii :

- **Gram negativni kokobacili**
- **oksidaza negativni**
- **katalaza pozitivni**
- **prisutni u okolišu (voda, tlo)**



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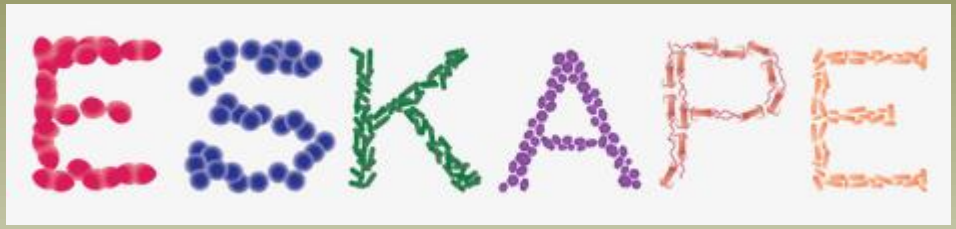

E. faecium

S. aureus

K. pneumoniae

A. baumanii

P. aeruginosa

Enterobacter spp.

Infection Control &
Hospital Epidemiology

Article Metrics

Volume 31, Issue S1 (Papers from the Fifth Decennial International Conference on Healthcare-Associated Infections)
November 2010 , pp. S7-S10

Progress and Challenges in Implementing the Research on ESKAPE Pathogens

Louis B. Rice [a1]

DOI: https://doi.org/10.1086/655995 Published online: 01 January 2015

InfectionControl.tips

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ESKAPES: Emerging Pathogens of Concern

By: Nick Barsby, Pervinder Singh Johal
Edited by: Andrew Duong, Dr. Uyen Nguyen

Date : January 5, 2016

Review

Clinical relevance of the ESKAPE pathogens

Jack N Pendleton, Sean P Gorman & Brendan F Gilmore

Pages 297-308 | Published online: 10 Jan 2014

Download citation http://dx.doi.org/10.1586/eri.13.12

Clinical Infectious Diseases

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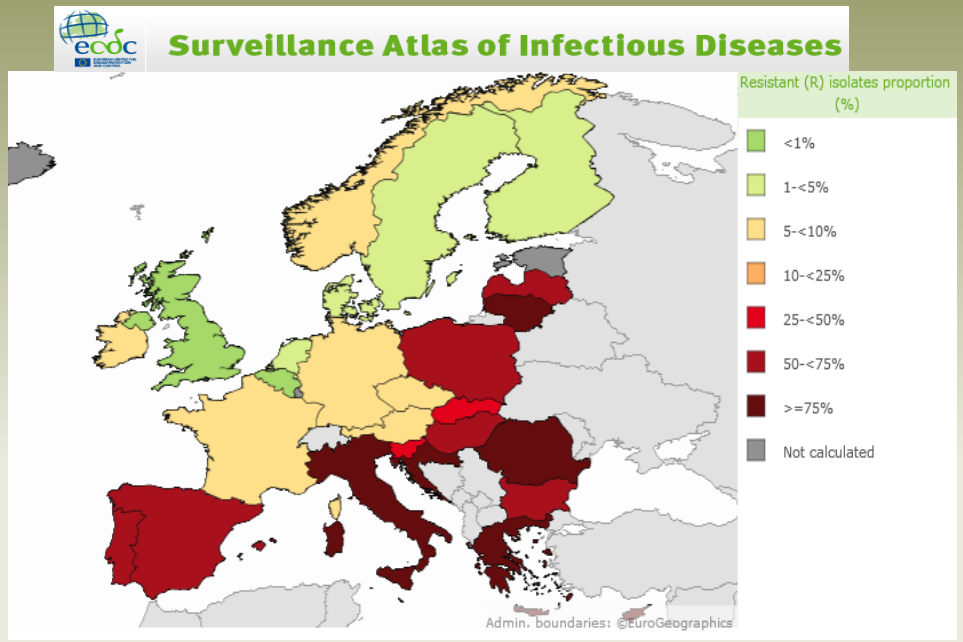
Bad Bugs, No Drugs: No ESKAPE! An Update from the Infectious Diseases Society of America

Helen W. Boucher, George H. Talbot, John S. Bradley, John E. Edwards, David Gilbert, Louis B. Rice, Michael Scheld, Brad Spellberg, John Bartlett

UVOD



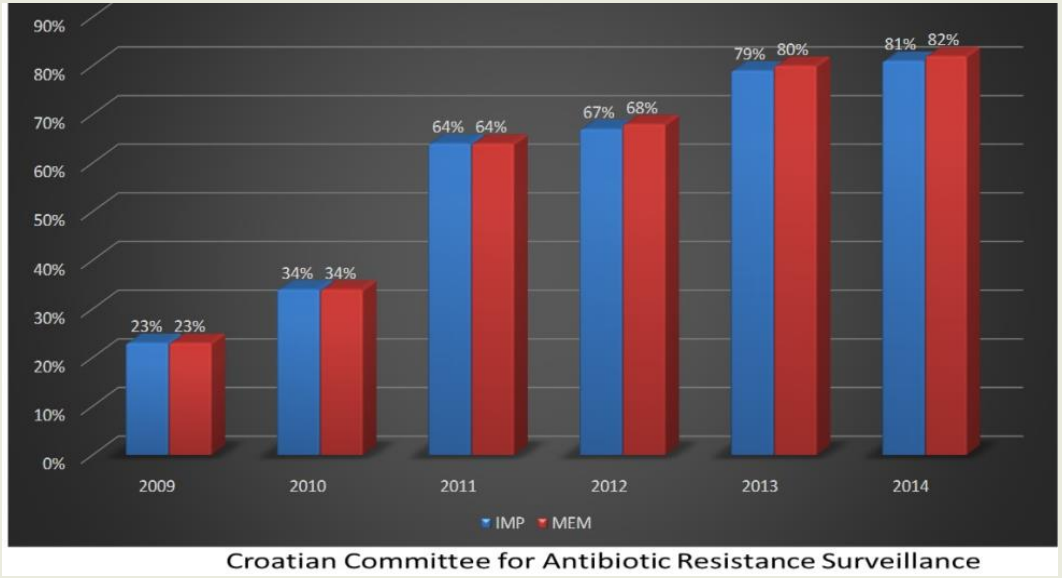
A.baumannii

rezistentan na karbapeneme u Europi 2015.g.

A.baumannii

rezistentan na karbapeneme u Hrvatskoj 2009. – 2016.

Goić-Barišić, Multidrug resistant Acinetobacter baumannii inside and outside hospital setting, CROCMID 2016



MDR (*multi-drug resistant*) ***Acinetobacter baumannii*** *:*

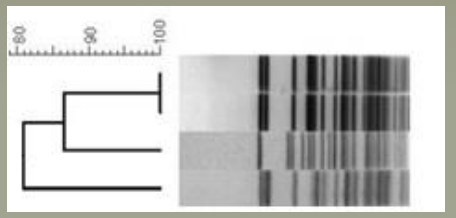
- ✓ oportunistički patogen, uzročnik bolničkih infekcija
- ✓ višestruko rezistentan na antibiotike
- ✓ lako izmjenjuje genetski materijal
- ✓ stvara biofilmove
- ✓ otporan na djelovanje dezinficijensa

prirodno stanište ?
način ulaska u bolnicu ?
put širenja u okoliš ?

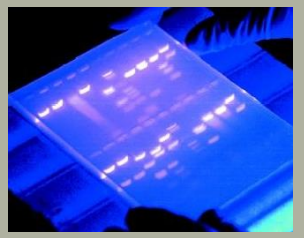
CILJEVI RADA

1. izolirati vijabilne MDR *A.baumannii* iz otpadne vode

2. genotipizacijom usporediti kliničke i okolišne izolate



3. utvrditi genetsku osnovu rezistencije na karbapeneme



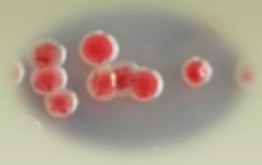
4. ispitati utjecaj morske vode na *MDR* izolat

METODE – *Izolacija vijabilnih karbapenem rezistentnih mikroorganizama*

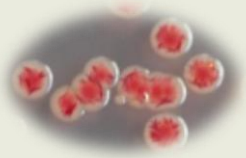
+CR102

37°C/48 h

42°C/48 h



Urođena rezistencija



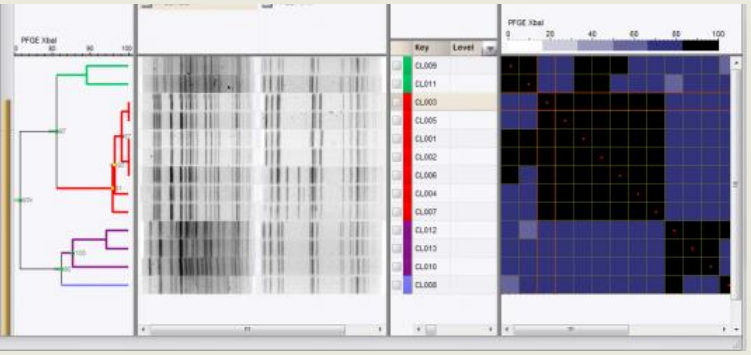
Stečena rezistencija

42°C/48 h

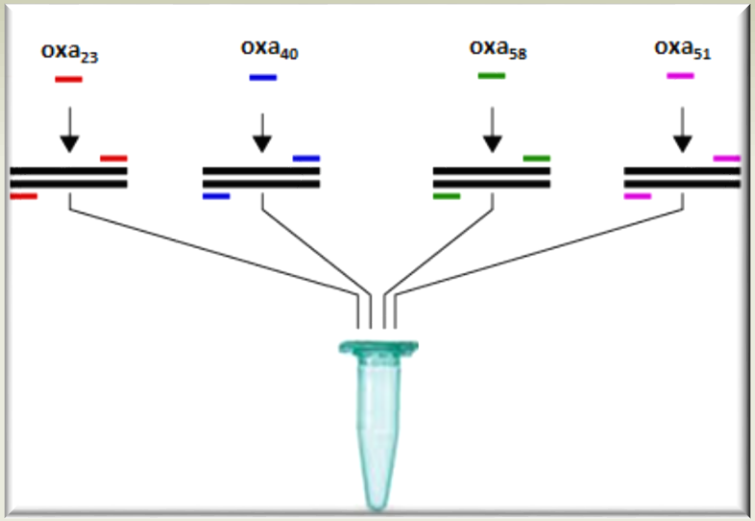
+ cefsulodin

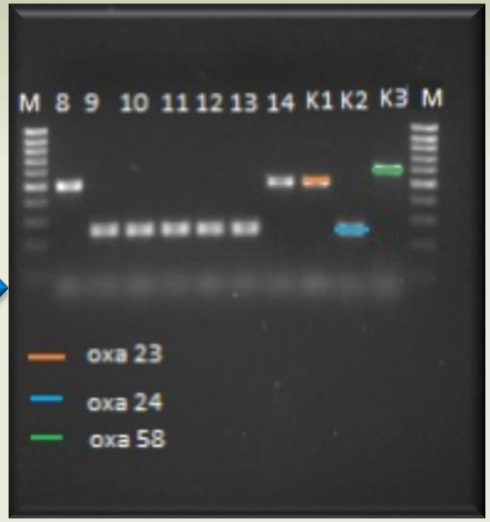
MDR *A.baumannii*

METODE – *Genotipizacija sojeva : PFGE*

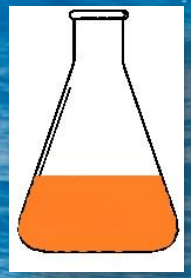


METODE – *Multiplex PCR*

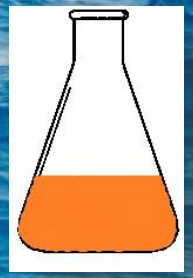


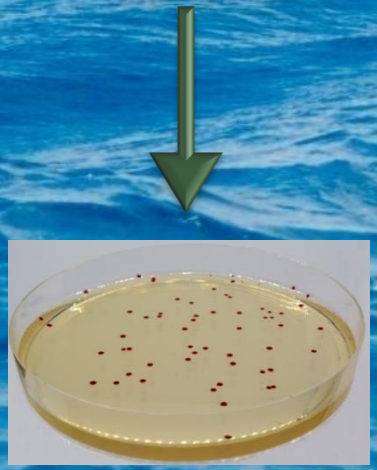


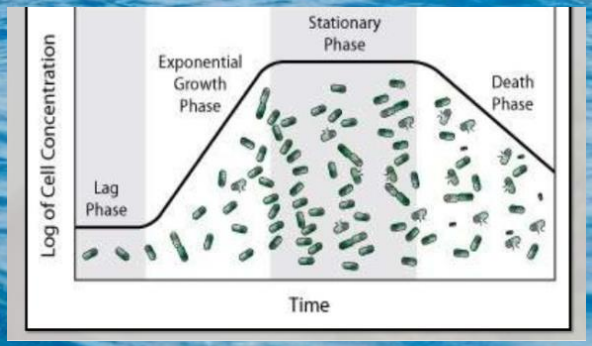
METODE – preživljavanje u moru

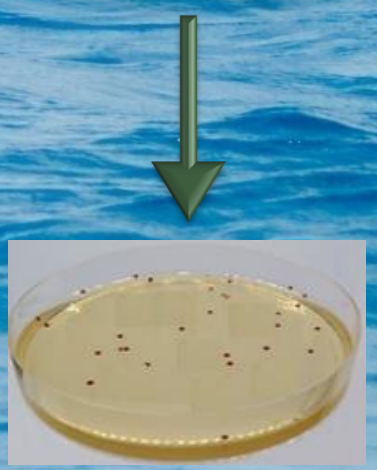


50 dana



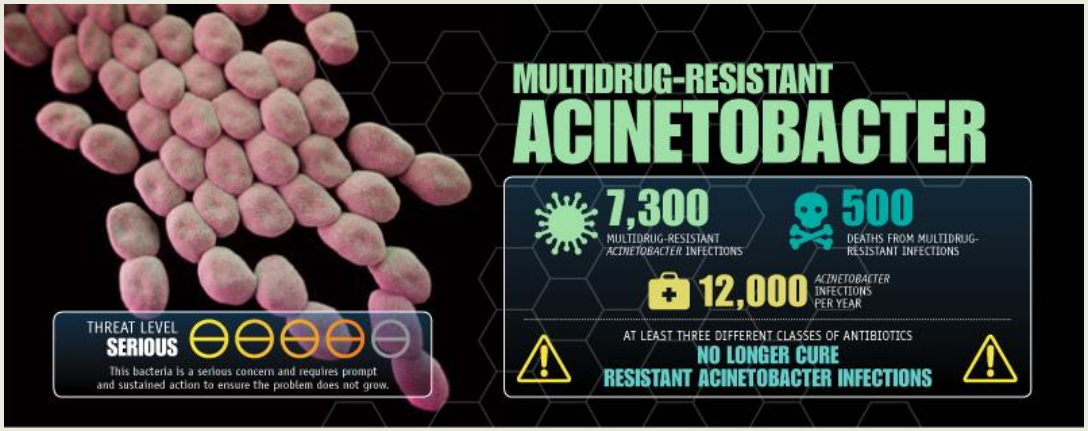




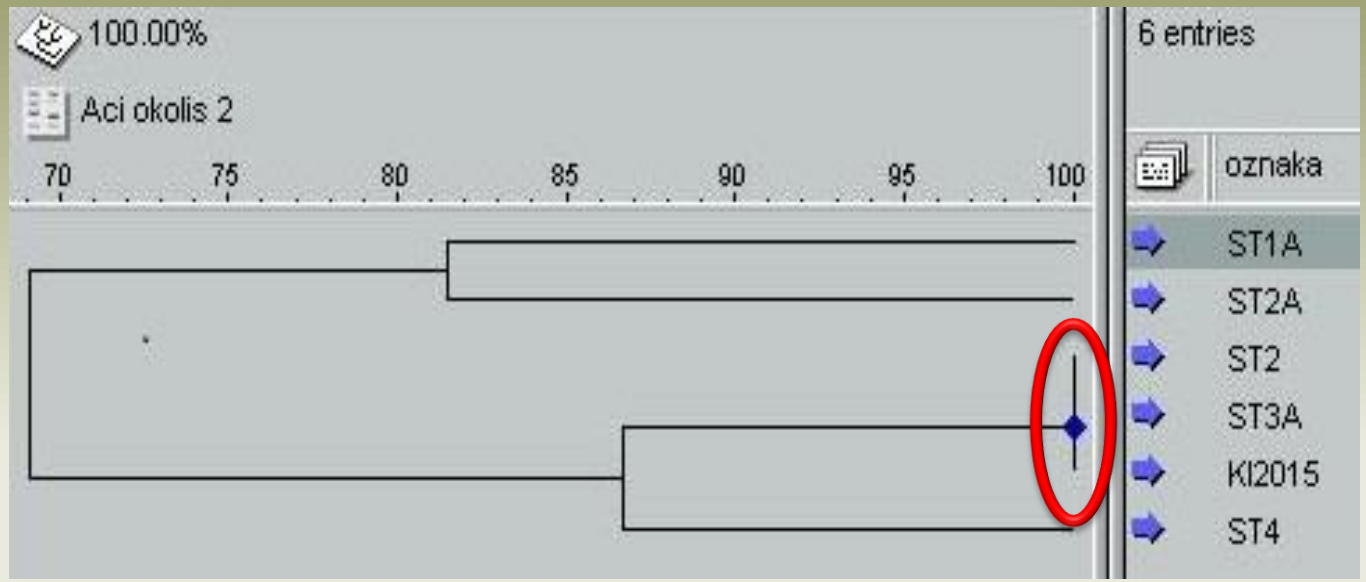


REZULTATI

- 50.000 cfu/ml mikroorganizama s **urođenom** rezistencijom na karbapeneme
- 600 cfu/ml mikroorganizama sa **stečenom** rezistencijom na karbapeneme
- 5 **višestruko rezistentnih (MDR)** ***A.baumannii***



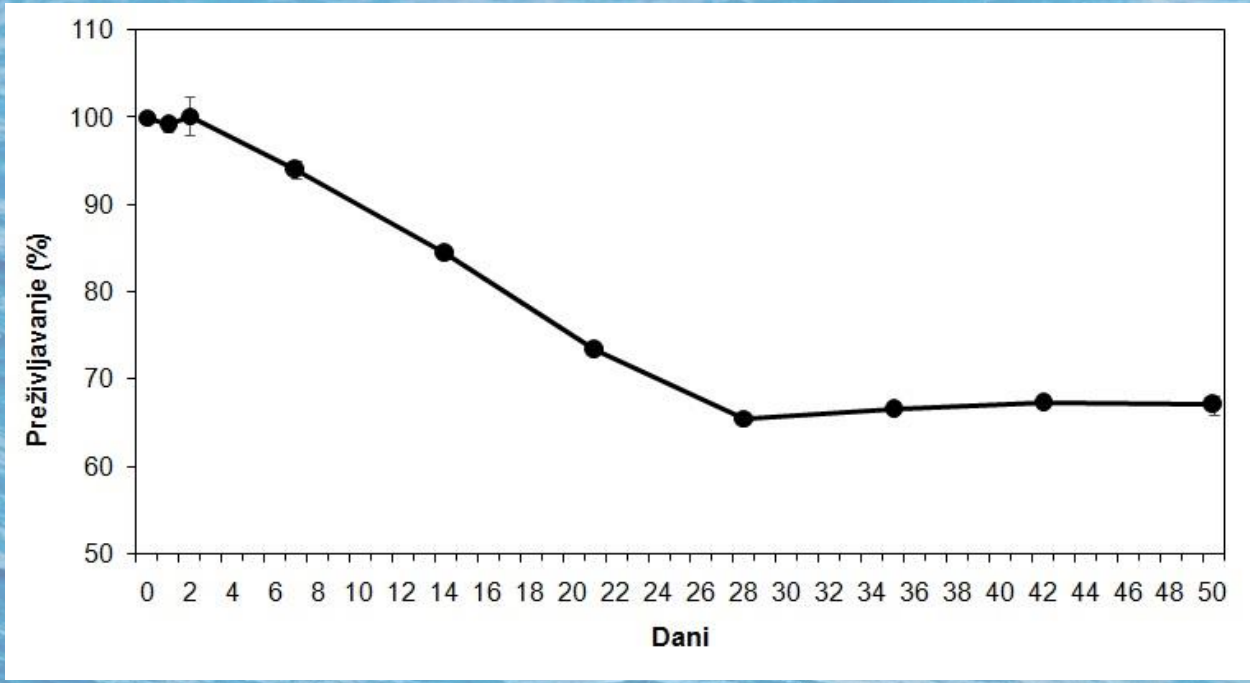
REZULTATI



2 izolata iz otpadne vode identičnog genetskog profila kao izolat iz bolnice

Dokazano prisustvo oxa_{24}

REZULTATI



Nakon 50 dana u morskoj vodi postotak preživljenja **67%!**

Je li nužno obraditi otpadnu vodu prije njenog ispuštanja u okoliš?

https://www.pmf.unizg.hr/naturaci

SVEUČILIŠTE U ZAGREBU
PRIRODOSLOVNO-MATEMATIČKI FAKULTET
Biološki odsjek
ZAVOD ZA MIKROBIOLOGIJU

Pretraži...

PRIJAVA U SUSTAV > UPISI > ALUMNI > KNJIŽNICA > POVEZNICE > SURADNJA SA ŠKOLOM > ODSJEK U MEDIJIMA

PROJEKTNI TIM | OBJAVLJENI RADOVI | KONGRESNA PRIOPĆENJA | DISEMINACIJA

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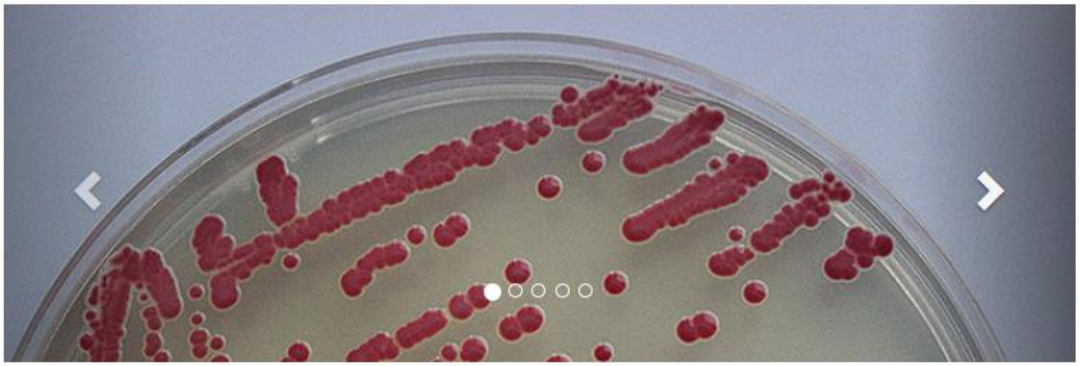
NASLOVNICA
Projektni tim
Objavljeni radovi
Kongresna priopćenja
Diseminacija



Prirodno stanište klinički značajnih Acinetobacter baumannii

Izvor financiranja: Hrvatska zaklada za znanost
Trajanje: 01. 09. 2015. – 31. 08. 2019.
Voditelj projekta: Prof. dr. sc. Jasna Hrenović
Sredstva: 999,210.00 HRK
Broj projekta: IP-2014-09-5656

Zahvaljujemo se Hrvatskoj zakladi za znanost što je omogućila realizaciju ovog projekta!