SURVIVAL OF *ACINETOBACTER BAUMANNII* IN NATURAL WATER MEDIA

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INTRODUCTION

Acinetobacter baumannii is an emerging human opportunistic pathogen. It causes nosocomial as well as community-aquired infections in imunosupressed patients (Towner, 2009; Dexter et al., 2015).

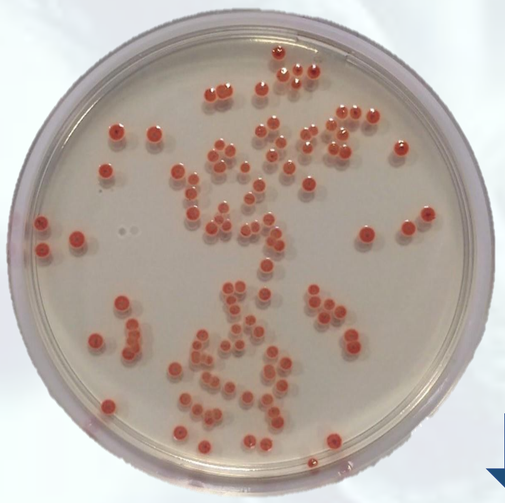
A. baumannii expresses resistance to multiple antibiotics and disinfectants and it persists in the environment for a few months (Espinal et al., 2012). There have been several reports of *A. baumannii* isolates recovered from the natural aquatic environment in the Seine River (Girlich et al., 2010) and the Sava River (Seruga Music et al., 2017) as well as influent and effluent water from the wastewater treatment plant in Zagreb (Hrenovic et al., 2016).

STUDY AIM

The aim of this this investigation was to examine the survival rates of *A. baumannii* in different types of natural water media with different chemical oxygen demand values.

MATERIAL AND METHODS

The experiment was conducted with two multi-drug resistant (MDR) environmental isolates of *A. baumannii* according to the experimental protocol described in Figure 1.



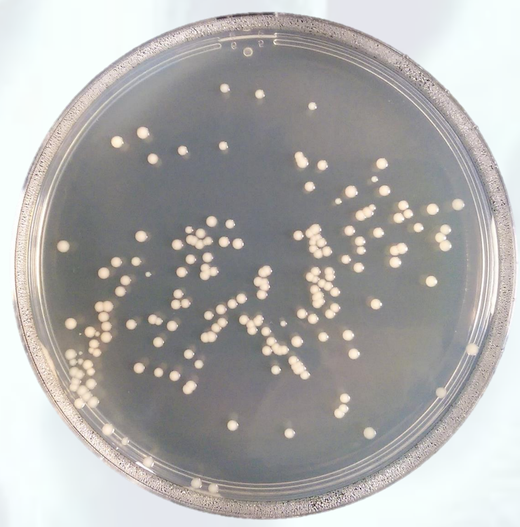
A. baumannii cultivation on CHROMAgar Acinetobacter at 42°C/48h

100 mL of sterile water medium
20°C/28 days with stirring

Spring water

Seawater

Effluent water (secondary type of municipal wastewater treatment plant)



Nutrient agar plates at 42°C/24h
CFU count
Survival rate calculation

Figure 1. Experimental protocol

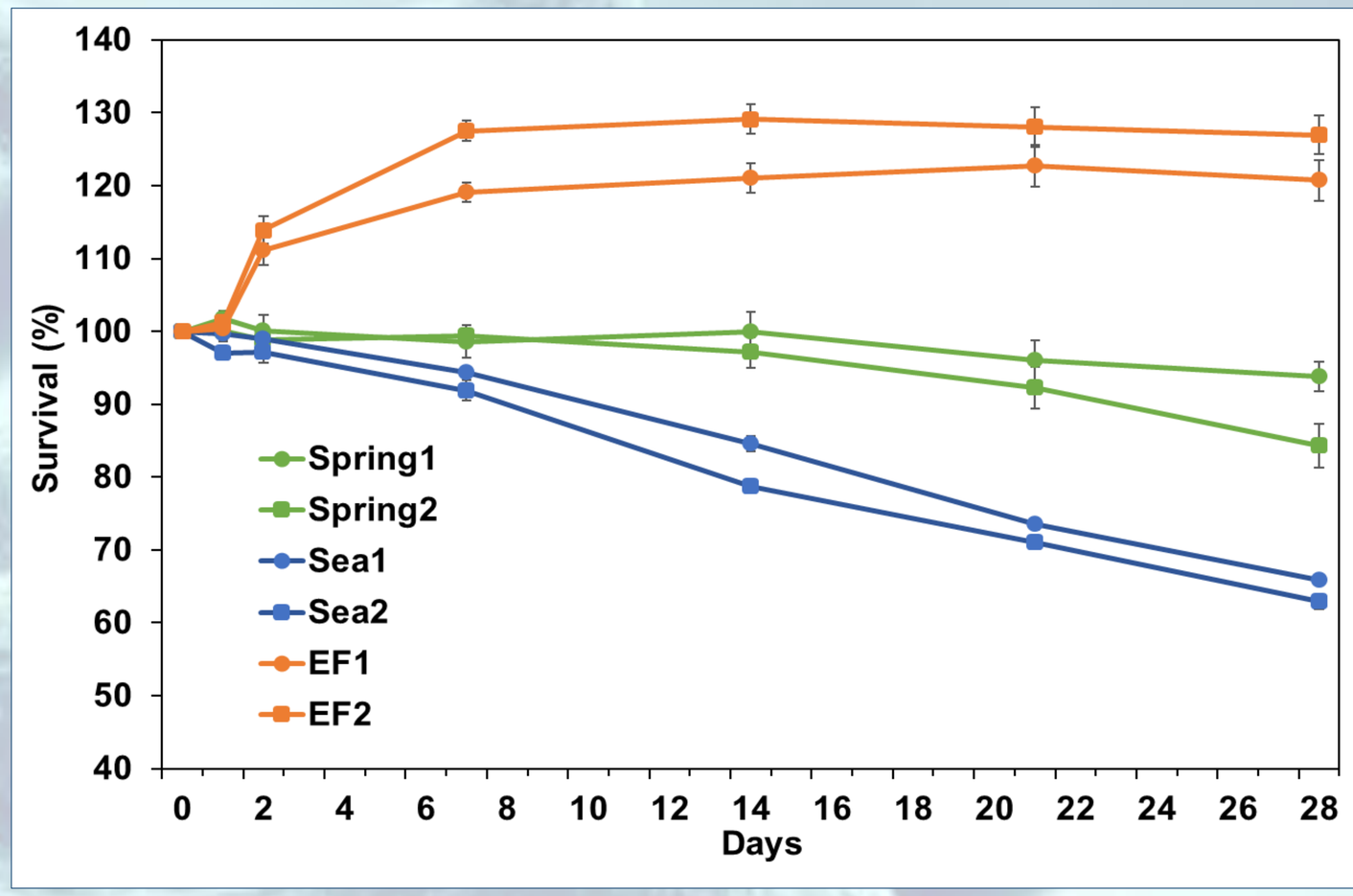


Figure 2. Survival rates of *A. baumannii* in different types of natural water media, initial concentration of bacteria was 6.8 ± 0.3 log CFU/mL

RESULTS

- In effluent water multiplication of *A. baumannii* was evident, but not in spring water or seawater
- Survival of *A. baumannii* after 28 days of incubation was: 124, 89 and 56% in effluent, spring water and seawater, respectively
- Survival rate was dependent on the chemical oxygen demand of water media: 24, 3 and 4 mgO_2/L for effluent, spring water and seawater, respectively

CONCLUSION

- MDR isolates of *A. baumannii* successfully persist in the natural water media during 28 days at 20°C
- Survival rate of *A. baumannii* is positively correlated with the availability of nutrients in water media

ACKNOWLEDGEMENT

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