



43rd IAD Conference

**Rivers and Floodplains in the Anthropocene:
Upcoming Challenges in the Danube River Basin**

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– Proceedings –

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Preface

Dear Participants of the 43rd IAD Conference,

Living in pandemic times, it is not easy to organize an international conference. However, such conferences are very important for the scientific community, especially if this community is so diverse regarding countries and topics as IAD is.

This year, IAD celebrates a special event. Since 65 years since it is continuously present in limnological research in the Danube River Basin. For many decades, IAD was among the very few scientific fora ensuring connectivity between the Western and Eastern research teams, facilitating knowledge exchange, as well as joint projects and publications in the region.

The IAD Conference always was a 'jour fixe' to meet colleagues of the IAD family from the entire Danube Basin. However, this year we have to celebrate this IAD anniversary in a virtual way, as unfortunately, it is still not possible to meet personally due to the particular situation of our countries, with lockdowns and travel restrictions still in place.

Our hope is that the upcoming event – carried out as an online conference – can at least partly substitute the usual way of meeting and foster active exchanges between the participants.

The number of registered participants, around 80 persons, makes us hopeful! Furthermore, there are 41 presentations (39 oral and 3 posters) which show the wide thematic range on the one hand, and the interest of the scientists working within IAD to present their work on the other hand. Additionally it proves the interest of all of us to listen to the latest scientific developments in aquatic ecology research in the Danube Region.

We hope that this 'special' conference will be successful and interesting for IAD and will represent the transition to normal times in the future!



Cristina Sandu (President of IAD)



Bernd Cyffka (Head of Conference)

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Non-wild type antibiotic resistant *Escherichia coli* in the River Danube: a six-year-comparison

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Introduction

The emerging occurrence of human induced antibiotic resistant bacteria (ARB) is not only limited to clinical surroundings: they can also be found in the human population, animals and the water environment. Large rivers are of great concern as regards the spreading of ARB. Thus, this ongoing study's aim is to analyze the major propagation pathways and sources of ARB in the Danube, and to do a six-year-comparison with data obtained in 2013.

Study design and methods

Within the frame of the 4th Joint Danube Survey (JDS) of the International Commission for the Protection of the Danube River (ICPDR), water samples were taken at 36 sampling points along the whole Danube. *Escherichia coli* as clinically relevant organisms were isolated and tested for their susceptibility to 20 different antibiotics.

Results

1298 *E. coli* isolates have been tested so far. 11.33 % of them were multiresistant and 23.19 % were resistant to one or two classes of antibiotics. The preliminary data show a very similar pattern compared to the data obtained in 2013 (629 isolates) when 9.70 % of the isolates were multiresistant and 29.09 % were resistant to one or two classes of antibiotics. Most of the resistances are still to ampicillin and tetracycline. There are no resistances to carbapenems, colistin, amikacin and tigecycline. But there is a significant increase in resistances to amoxicillin with clavulanic acid, moxifloxacin and piperacillin with tazobactam and a significant decrease regarding tetracycline. 21 isolates are confirmed ESBL-producers while in 2013 there were four.

Discussion

In comparison the data of 2013 and 2019 show a similar pattern regarding multiresistance. Regarding resistances to single antibiotics significant changes could be determined. However, there are still many of the isolates to be tested until the final analysis.