Abstract

Antibiotic Incidence, Distribution and Resistance in Wastewaters [†]

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In 2016, the population-weighted average consumption of antibiotics from the European Union (EU) and European Economic Area (EEA) for systemic use in the hospital sector was 2.1 defined daily doses (DDD) per 1000 inhabitants per day. Consumption ranged from 1.0 (Netherlands) to 2.9 (Malta) DDD per 1000 inhabitants per day.

Although Romania is in the top of EU countries in terms of antibiotic resistance rates with Bulgaria, Croatia, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Romania, and Slovakia, the prevalence of nosocomial pathogens and resistance genes to associated antibiotics (RGAAAs) in natural or polluted aquatic environments are not documented nationally. Furthermore, the effects of wastewater discharges from the hospital on the prevalence and characteristics of nosocomial pathogens are not studied in Romania.

The purpose of this study is to evaluate the incidence of antibiotics or metabolites and to correlate with the antibiotic resistance (AR) and antibiotic resistance genes (ARGs) occurrence and dynamics associated with aquatic environments characterized by a high level selective pressure (especially hospital, poultry waste water, urban and pharmaceutical waste water treatment plants—WWTPs). This research will assess the incidence and distribution of the antibiotics in wastewaters, will correlate them with antibiotic resistance and the impact on the aquatic environment.

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