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Patterns of antibiotic resistance in enterococci from rural ground water sources

Bountouni M¹, Efstratiou M A¹ and Kefalas E²

¹University of the Aegean, Greece

²Laboratory of Water Quality, Greece

Excessive consumption of antibiotics by humans and in veterinary medicine has led to the excretion of these substances in the environment through feces. Some find their way into aquifers and end up in ground water used for irrigation. The purpose of this study is to investigate the spread of antibiotic resistance in enterococci in rural ground water sources. 100 strains of enterococci were isolated, 39 from wells, 32 from boreholes and 29 from springs from three Greek islands: Chios, Lesbos and Lemnos. The antibiotics against which resistance was tested were five: 3 quinolones-Norfloxacin, Ciprofloxacin, Levofloxacin, 1 cephalosporin-Cefaclor and one penicillin-Amoxicillin. None of the enterococci tested was sensitive to all five antibiotics. All enterococci were resistant to Levofloxacin and Norfloxacin, 89% were resistant to Ciprofloxacin, 51% were resistant to Cefaclor, 11% to Amoxicillin. Multiple resistance was the rule: Only one of the enterococci tested was resistant to one antibiotic (1%). 11% were resistant to two antibiotics, 38% to three, 46% to four antibiotics. Four (4%) of the enterococci isolated were resistant to all five antibiotics tested. There appeared no differences in the patterns of resistance between the different sources of ground water: Wells, boreholes, springs. Antibiotic resistant bacteria from water sources are a sign of the widespread consumption of antibiotics either by humans or in animal husbandry. Their presence in water is alarming, because there is the potential that they are carried into the food chain.

Biography

Marina Bountouni has completed her BSc in Marine Sciences, Department of Marine Sciences, University of the Aegean, Greece and is currently pursuing MSc in Environmental Policy and Biodiversity Conservation at the Department of Environment of the same university.

marbou94@yahoo.gr