used for *Legionella*. Gram negative strains were identified by API20E, API20NE systems.
Results: We found that most of units exceed American Dental Association recommendation (Anonymous 1996) for DU water quality (range 200–50000 CFU/ml). In 12 units studied, TVCs were higher in the high-speed handpiece(91.6%) than the air-water syringe(8.3%). Microorganisms isolated from DU: *Pseudomonas fluorescens*, *Moraxella* spp, *Photobacterium damsela*, *Ochrobacterium anthropi*, *Pasteurella haemolytica*. Fungus were identified as *Aspergillus flavus*, *Penicillium expansum*. All water samples were negative for *Legionella* sp.
Conclusion: Numerous studies showed that DUWLs contain high densities of bacteria, mainly Gram negative, aerobic, heterotrophic bacterial species many of which have been implicated in human infection. We suggested that microbial contamination in DUs should be controlled to eliminate opportunistic pathogens and to provide water for dental treatment which meets public health standarts for ADA recommendation.

P1916

Antibiotic resistance of bacterial strains isolated from water samples and fish

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Objectives: The presence of resistant bacterial strains in surface fresh and marine waters, in drinking waters and edible cultured and free-catch fresh water and marine fish was investigated in order to assess potential risks for public health.
Methods: A total of 1580 samples (240 from drinking water, 50 from lake water, 400 from river water, 450 from marine water, 230 from free catch and 210 from cultured fish) were collected during a 4 year survey (2000–2003) from different point sources in the region of Northwestern Greece. All samples were processed following standard microbiological methods and susceptibility tests to antibiotics used in the routine medical practice were performed, using the disk diffusion and the MIC test (E-test).
Results: There were isolated 104 *E. coli* strains, 147 *S. aureus*, 106 *E. faecalis*, 55 *E. faecium* and 207 *Pseudomonas* spp. The strains from cultured fish exhibited remarkable multiresistance: 64.3% of *E. coli* strains from cultured fish were resistant to Ampiciline, 35.7% to Cefuroxime and 7.14% to Ceftazidime and Ciprofloxacine. On the contrary, only 5% of the strains from free-catch fish were resistant to Ceftazidime and 37.33% of the *E. coli* isolates from water samples were resistant to Ampiciline. None of the *S. aureus* strains isolated during this survey was resistant to Vancomycine and Teicoplanine. The most commonly isolated *Enterococci* species were *E. faecalis* (66.6%) and *E. faecium* (33.3%). However, there were no Vancomycin resistant *Enterococcus* spp., but there were isolated *E. faecium* strains resistant to Ampicillin (7%).
Conclusion: The presence of resistant bacterial strains in the aquatic environment and in the food chain originating from the aquatic environment is an important health issue and the potential impact on public health has to be addressed in relation to food safety concerns.

P1917

Pattern of extended-spectrum beta-lactamase producers in coastal seawater of Northern Portugal after a four-year period

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Objectives: Access the presence of extended-spectrum beta-lactamase (ESBL) producers, in coastal seawater of Oporto urban area in 2004 and compare with those obtained in 2000.
Methods: Coastal seawater samples were collected monthly, between February and July 2004. Isolates were selected by membrane filtration technique and the filters were placed on Mac Conkey agar and Mac Conkey agar with ceftazidime (5 mg/l) or cefotaxime (2 mg/l). Colonies of lactose fermenters were randomly selected and screened for ESBL production by the double disc synergy test. Identification of the selected strains was achieved by classic biochemical tools and ID 32 GN. Susceptibility to antimicrobial agents was determined according to the NCCLS guidelines. Beta-lactamases were characterized by isoelectric focusing.
Results: ESBL producers were found in marine coastal waters of Oporto urban area over the mentioned period of time, in 2004. Actual work, shows a pattern of different types of ESBL and different associations of beta-lactamases, by opposition to the clonal characteristic of ESBL-producing *E. coli* isolates in 2000.
Conclusion: The presence of isolates showing different ESBL and different beta-lactamases association patterns, as expected, in sea coastal water in different dates, seems to indicate distinct epidemiological relationships associated to a persistent, incoming of ESBL producers to the natural environment, providing a track for environmental dissemination of resistant bacteria and genes, that may create a source of transferable traits for emerging pathogens, via natural reservoirs of resistance, relevant in terms of public health and environmental protection.

P1918

Antibiotics in the aquatic and terrestrial environment – Is there a problem?

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Introduction: In most cases, antibiotics are excreted in unmetabolized form and are then discharged into hospital effluent or municipal sewage water. Unused drugs and remainders thereof are sometimes disposed of down drains. The drugs and their metabolites that are not eliminated in the sewage treatment plant (STP) pass through it and enter the aquatic environment, where if they are not eliminated or (bio)degraded they may eventually enter drinking water. If they are eliminated by sorption onto STP sewage sludge which is later used as a fertiliser they may later reach soil. Antibiotics may also end up in soil when they are used as growth promoters in animal husbandry. The antibiotics may disturb microbial activity in sewage treatment processes and soils and affect biodegradation of contaminants and natural organic matter. Furthermore, resistant bacteria may be selected in the aeration tank of sewage treatment plants and in soils, and eventually reach humans via drinking water or the food chain.
Methods: In this study antibiotic input into municipal sewage was estimated and its concentration analysed. The biodegradability of some clinically important antibiotics and their effects against environmental bacteria were examined.
Results: The concentration of antibiotics in hospital effluent was calculated as being as high as 300 μg/L for single compounds, and in total approximately 40 μg/L in municipal sewage. As much as 120 μg/L have been analysed for single compounds in hospital effluent. The biodegradability of most compounds investigated was very low. Some compounds such as ciprofloxacin sorbed strongly onto sewage sludge. Concentrations calculated for hospital effluents and the MICs for sensitive bacteria were in the same order of magnitude. The genotoxicity of some compounds was not eliminated.
Conclusion: It can be concluded that the input of antibiotics into the aquatic environment should be reduced. In general, the environmental significance of therapeutic drugs should be included in the curricula of doctors and pharmacists.