



Lisbon School of Health Technology | Park of Nations



TEMPH 2014

TRENDS IN ENVIRONMENTAL MICROBIOLOGY FOR PUBLIC HEALTH

18 - 21 SEPTEMBER 2014

WWW.TEMPH2014.COM

Table: Antibiotic resistance in foodborne pathogens

Keynote entitled: **Current perspectives of emerging antibiotic resistance in foodborne bacteria**

Author: Manuela Caniça

National Reference Laboratory of Antibiotic Resistances and Health Associated Infections (NRL-AMR-HAI), Department of Infectious Diseases, National Institute of Health Dr. Ricardo Jorge

Abstract:

The increasing occurrence of antibiotic resistance in primary and processed food products, it is of the greatest importance, where the horizontal gene transfer of antibiotic resistance determinants is of huge concern. Indeed, common inhabitants of the human and animal gut of food animals may be disseminated through the food chain. The widespread use of drugs in veterinary can also contribute to the selection of antibiotic resistance mechanisms in pathogenic and non-pathogenic isolates. The common mode of plasmid-mediated resistance (one gene for one class of antimicrobials) requires that an organism harbor and express an array of genes in order to maintain multidrug-resistance; however, for example, at fluoroquinolone resistance, bacteria have an innovation that is a pleiotropic drug-modifying enzyme providing resistance to two structurally and functionally different classes of antibiotics by acquisition of a single gene. But other resources are available to the bacterium confronted with the challenge of antibiotics that is the ability to acquire resistance genes, but not express them; such “nonexpressing” bacteria would remain sensitive to the antibiotic while carrying a potentially transmissible resistance gene. Biofilm formation is also an important phenomenon in the food process. A new dimension in microbial adaptability is taking serious proportions, thus the Council Recommendation “on the prudent use of antimicrobials agents in human medicine” (2002/77/EC), highlight that the “*coordination between human, veterinary and environment sectors should be ensured and the magnitude of the relationship between the occurrence of antimicrobial resistant pathogens in humans, animals and the environment should be further clarified*”. In fact, a “One Health” approach is being encouraged.