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Procedimientos en Microbiología Clínica (número 58, 2.ª edición 2016)

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Microbiological techniques to detect multi-drug resistant microorganisms in animals, foods and environmental samples

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Antibiotic resistance is a serious public health problem. In recent years, there has been a great deal of concern about the problem that the use of antibiotics may represent, not only in the human sphere, but also in the animal sphere, and the potential for transfer of multi-drug resistant bacteria from animals to humans, thereby also involving the food chain. In fact, the transfer of certain multi-drug resistant bacteria through the food chain is presently considered to be a food safety problem.

This procedure contains a scientific document and a technical document and describes the microbiological techniques that should be used to detect multi-drug resistant microorganisms in animals, foods and environmental samples. The procedure focuses more specifically on some microorganisms of special clinical significance, such as enterobacteria producing extended-spectrum beta-lactamases (ESBLs) or plasmid-encoded AmpC beta-lactamases (pAmpC), or non-fermenting enterobacteria and Gram-negative bacilli producing carbapenemases or with plasmid resistance to colistin, methicillin-resistant *Staphylococcus aureus* and *Enterococcus* spp. with acquired vancomycin resistance.

The scientific document first analyses all epidemiological matters related to these multi-drug resistant microorganisms in the animal, food and environmental sphere. It then reviews the methods of sampling for isolation of these microorganisms, with an emphasis on the enormous casuistry of samples that may be obtained and how sampling is performed (in live animals, animals slaughtered in a slaughterhouse, free-living animals, food specimens of animal or plant origin and a wide variety of environmental specimens). Finally, the procedures for the isolation and characterisation of the multi-drug resistant microorganisms selected are analysed. The procedure defines the methods and recommendations made in some cases by the European Food Safety Authority (EFSA), as well as those made by other national and international regulatory bodies.

The technical document describes the procedures for taking samples from animals, foods and the environment as well as for obtaining the multi-drug resistant microorganisms selected.

For information on how to implement these procedures, see SEIMC microbiological procedure number 58: "*Técnicas microbiológicas de detección de microorganisms multirresistentes en animales, alimentos y muestras ambientales*" (Microbiological techniques to detect multi-drug resistant microorganisms in animals, foods and environmental samples) (2nd edition 2016) (www.seimc.org/protocolos/microbiologia).

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