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Novel approach for multiplex detection of antibiotic residues in milk by means of electrochemical biosensors

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Antibiotic residues may be present in foodstuffs (e.g., milk, meat, eggs, etc.) after treatment of livestock. The first stage of food control is carried out through screening methods. Thus, routine detection of antibiotic residues with high sensitivity is central for food safety. Conventional screening methods are microbiological or immunological methods (e.g., ELISA). Biosensor type methods are in continuous development to improve the performance and portability of screening methods. Our laboratory has worked on the evaluation of screening methods developed from optical biosensors. Now, we focus on electrochemical biosensors which are a promising way to develop cost-effective and portable screening methods. To date, this track is not developed by any other laboratory from those in the field of antibiotic residue testing. An innovative method based on disposable electrodes, coupled to magnetic beads, allowing the electrochemical detection in milk of three families of antibiotics simultaneously was published by a Spanish academic team. Our laboratory will evaluate the transferability of the method. The optimization of the analytical parameters and the evaluation of the method performance according to the European decision 2002/657/EC (2002) will be presented here. Advantages and drawbacks in developing this type of electrochemical biosensor for the detection of antibiotic residues in food will be concluded.

Biography

Valerie Gaudin completed her MSc in Veterinary Pharmacy and Biochemistry and has 20 years of experience as a Government Analytical Biochemist. She has completed her PhD in 2016 at Rennes University, France. She is a Senior Analytical Biochemist at ANSES- Laboratory of Fougères, France. She is responsible for a number of research projects in the areas of antibiotic residues, veterinary medicines, and emerging biosensor techniques. She has published more than 26 peer reviewed papers based on microbiological methods, ELISA kits and biosensors.

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