

# **THE WITHDRAWAL TIME OF VETERINARY DRUGS AND THE POSSIBLE USE OF A MATHEMATICAL MODEL TO PREDICT RESIDUE LEVELS IN BIOLOGICAL MATRICES**

E. Daeseleire<sup>1</sup> and S. Croubels<sup>2\*</sup>

<sup>1</sup>: Institute for Agricultural and Fisheries Research, Technology and Food Science Unit, Melle, Belgium

<sup>2</sup>: Ghent University, Department of Pharmacology, Toxicology and Biochemistry, Faculty of Veterinary Medicine, Merelbeke, Belgium

The administration of veterinary drugs in general can give rise to the presence of residues in products of animal origin. Also trace levels of drugs or additives present in feed, caused for example by cross-contamination, can give rise to residues.

For coccidiostats, Commission Regulation 124/2009 sets maximum levels in food resulting from the unavoidable carry-over of these substances in non-target feed. However, other veterinary drugs were not included.

The possibility of a chemical substance to give rise to residues in edible tissues depends on pharmacokinetic parameters such as absorption, distribution, metabolism and excretion, which in turn may depend on physicochemical properties of the compound. These parameters are intensively studied for veterinary drugs but less or not for additives in feed. A property of major significance is the terminal elimination half-life, which in turn depends on clearance, rate of elimination from the body and volume of distribution within the body. However, pharmacokinetic differences in mean values, variability in intake resulting from herd treatment and variability between healthy experimental animals and diseased animals in a clinical population, have implications for residue depletion and withdrawal times. An overview of the factors and mechanisms which impact on tissue residues and withdrawal time will be presented.

The traditional pharmacokinetic principles seem applicable for the modelling of residues in tissues, but not in eggs. It seems that the transfer of residues in eggs only happens in one direction. Some attempts were made to predict if a residue would be present in egg yolk or white, but Kan concluded in his thesis that this was very difficult and not possible with the current knowledge. A project will be presented in which a mathematical model will be developed that could predict residue values in chicken meat and eggs. This could be a help in case unauthorized medicines or additives would be present in feed for broilers or laying hens.

\*: Corresponding author: e-mail: [els.daeseleire@ilvo.vlaanderen.be](mailto:els.daeseleire@ilvo.vlaanderen.be); Tel: +32(0)92723032; Fax: +32(0)92723001