OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Summit on Toxicology
October 7-9, 2013 Hampton Inn Tropicana, Las Vegas, USA

The use of minipig species in toxicology, added values and model limitations

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Abstract

The Minipig has been a well-recognized experimental animal model in the preclinical research field for many years and has gained in massive importance over the last decade, especially in Europe (e.g., Re Think project, Minipig Research Forum meetings). Minipigs are increasingly being used as an alternative to the traditional non-rodent species in nonclinical sciences because of the physiological similarities with Human organs. The minipig is a model of choice especially for skin tolerance and cardiovascular safety assessment. By experience and with regards to the data found in the literature it has been proven now that this animal model can be used for all traditional and less common routes of administration. In dermal toxicity testing the minipig remains the gold-standard model. With the implementation of new ethical approaches and innovative handling techniques (positive reinforcement) it has become a popular species, leading to the transformation of many dog into minipig units across the pharmaceutical industry. To note, the total costs for a minipig study and the amount of compound needed are not significantly higher than a dog study. However, the lack of antibodies/macromolecules placental transfer in reproductive toxicology may limit its role for some products, despite the close sequence homology with Humans.

In addition, for some non-pharmaceutical product categories it is explicitly indicated that the dog is the first choice as a non-rodent species for toxicity testing (biocides, pesticides); for historical reasons rather than scientific rationale. Furthermore, there still a need for additional comparative and historical data for a better human chemical-induced toxicities prediction.

Biography

Sofiene Mhedhbi has completed his DVM in 1998 from the Veterinary School of Tunis, Tunisia followed by the French national competition for veterinary diploma recognition in 1999. In addition, he holds an MSc in Pharmacology (University of Paris V, 2000), an MSc in Pharmacokinetics & Drug Metabolism (University of Paris XI, 2000) and an MSc in Veterinary Ophthalmology (Veterinary school of Toulouse, France, 2004). He started his professional career as a toxicologist in a preclinical CRO (CiToxLab) and he is acting since 2003 as a Senior Toxicologist, Veterinarian and Ophthalmologist in a successful innovation-based company focused on dermatological disorders.