John James Stewart Cadwell, J Drug Metab Toxicol 2017, 8:2(Suppl)
DOI: 10.4172/2157-7609-C1-008

The hollow fiber infection model for antimicrobial pharmacodynamics and pharmacokinetics

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The recent introduction of the hollow fiber infection model represents an important advancement in the field of *in vitro* toxicology. Many toxicologists believe *in vitro* testing methods are a useful, time and cost effective tool for drug discovery but it is generally accepted that many of the available tests are not effective for examining the effects of both time and concentration, and do not closely mimic human kinetics. This is because they do not properly take into account pharmacodynamic actions (what a drug does to the body) and pharmacokinetic actions (what a body does to the drug). With the use of hollow fiber bioreactor cartridge this has now changed. The hollow fiber infection model is a useful addition to standard *in vitro* toxicology methods as it mimics changes in drug concentration over time, as they would occur in humans. The hollow fiber infection can mimic precisely human bioavailability, study meaningful numbers of organisms to reveal emerging resistance, mimic both adsorption and elimination curves, define total kill in a closed, biosafe system. The clinical utility of the HFIM has been demonstrated and is now endorsed by the EMA. An overview of historic PK/PD models is presented and the utility of the system as it relates to antibiotics and other drugs are discussed.

Biography

John James Stewart Cadwell received his degree in Pharmacology from the University of Miami in 1981. He spent additional time studying at the University of Nottingham and the National Institute of Medical Research at Mill Hill, outside of London. He served in various capacities in the Biomedical Research fields until 2000 when he became Founder of FiberCell Systems Inc. a company specializing in the research and supply of hollow fiber bioreactors. He has over 10 publications in the field and three patents relating to hollow fiber systems and is considered a world expert in the field.

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