Model Name
Escherichia coli MCR-1 ESBL (AR-BANK #0349), Thigh Infection, CFU/g

Item Number
608335

Introduction
This assay assesses the antimicrobial efficacy of test articles in a thigh muscle infection model. The microbial counts in tissue are measured. This CTX-M ESBL producing E. coli strain has reduced susceptibility to colistin due to expression of the plasmid borne mcr-1 gene. It is resistant to cephalosporins (ESBL), ciprofloxacin and gentamicin. The FDA CDC Antimicrobial Resistance Isolate Bank supplied this strain.

Procedure Summary
Groups of 5 neutropenic mice are used. Animals are intramuscularly inoculated with pathogen suspension then test articles or vehicle are administered at time points after inoculation. (Doses may be administered IV, SC, PO, IM, IP or by IV infusion.) At 24 hr after the first treatment, animals are humanely euthanized and tissue is aseptically removed. Tissue is homogenized and pathogen counts are determined by plating to agar medium. Pathogen counts from treatment groups are compared to vehicle groups and the significance of an effect is determined.

Turnaround Time(s)
5 weeks from sample receipt

Literature
DeRyke CA et al., Antimicrobial Agents and Chemotherapy 51:1481-1486, 2007

Optional Services
Analysis of cytokines (with Luminex) and PK exposure can be performed upon request.

Related Assay(s)  (Item # - Assay Name - Species)
610164* - Escherichia coli, MCR-1 (CDC AR0349) MIC - Bacteria
*provided by partner lab Eurofins Pharma Discovery Services

Modified Protocols
We will readily accommodate client-specified alterations.

Laboratory
These assays are performed at our AAALAC accredited BSL2 laboratory in Taipei, Taiwan.

Animal Welfare
All aspects of this work is performed in general accordance with the Guide for the Care and Use of laboratory animals (National Academy Press, Washington, DC, 2011). The study protocol was approved by the Pharmacology Discovery Services IACUC and is performed with the oversight of veterinarians to assure the humane treatment of laboratory animals.

Reference Compound(s)
Imipenem
608335 *Escherichia coli* MCR-1 ESBL, Thigh Infection
FDA CDC Antibiotic Resistance Isolate Bank
AR-BANK #0349
Colistin (CST) titration

*** P < 0.0001

Last modified November 20, 2017