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Eravacycline, a novel fluorocycline, is highly efficacious in treating tularemia and anthrax in animal models

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E ravacycline (ERV) is being developed as a broad-spectrum antibiotic for use as empiric monotherapy for the treatment of Serious and life-threatening multidrug-resistant (MDR) Gram-negative and Gram-positive bacteria. A Phase 2 clinical trial evaluated the intravenous (IV) administration of ERV versus ertapenem for the treatment of patients with complicated intraabdominal infections (cIAI). ERV had similar cure rates to standard-of-care comparator ertapenem and a strong safety profile. Two global phase 3 trials are ongoing, one for the treatment of cIAI and a second to evaluate IV to oral transition therapy for the treatment of complicated urinary tract infections. ERV is being evaluated for the use in the therapeutic treatment of tularemia, plague and anthrax in animal models. Its $MIC_{50/90}$ values against 33-35 isolates of *Francisella tularensis, Yersinia pestis* and *Bacillus anthracis* are 0.12/0.5; 0.06/0.12 and $\leq 0.016/0.016 \,\mu$ g/ml, respectively. Dosing models were developed to identify once daily IV dosages in cynomolgus monkeys and New Zealand white rabbits equivalent to therapeutic doses of 1.5 or 2.0 mg/kg/day IV ERV. Using fever or increase in circulating protective antigen (anthrax model only) as a trigger-to-treat, animals treated for 21 or 28 days with either humanized dose were protected from death due to tularemia or anthrax respectively. Further studies with ERV are warranted to confirm the efficacy seen in the studies and to determine if ERV can be an important empiric therapy for the treatment of respiratory infections by biothreat pathogens.

Biography

Joyce A Sutcliffe, PhD, is Senior Vice President for Tetraphase Pharmaceuticals, Inc. Her responsibilities encompass managing discovery biology and preclinical development. She is involved in strategy for clinical development, marketing assessments, budgeting, resource allocation, government contract writing and management of awarded contracts. She has more than 30 years of experience in antibiotic research and development. She is currently the chair of the Antimicrobial Agents and Chemotherapy Division of the American Society for Microbiology. Her expertise is antimicrobial resistance mechanisms: The challenge and the driver for new antibiotics.

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