AN EXPERIMENTAL MURINE MODEL OF KLEBSIELLA PNEUMONIAE GASTROINTESTINAL TRACT INFECTION: A COMPARATIVE STUDY OF THE EFFECTS OF RECOMBINANT BACTERIOCINS AND ANTIBIOTICS

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A mouse model study comparing recombinant bacteriocin klebicin-KvarM with ciprofloxacin found the bacteriocin significantly more effective at reducing gastrointestinal Klebsiella pneumoniae colonization after four days of oral therapy.

KEY POINTS

- Bacteriocin KvarM (5 mg/ml coated for small and large intestine release) reduced K. pneumoniae counts from 1.4 x 10^6 CFU to 1.7 x 10^2 CFU with 63.9 percent efficacy (p = 0.026) and showed significant difference versus untreated infection (p = 0.05).
- Ciprofloxacin (2 mg/200 µl) reduced K. pneumoniae counts from 8.75 x 10^5 CFU to 3.51 x 10^3 CFU with 37.1 percent efficacy (p = 0.1002) and did not reach statistical significance versus untreated infection (p = 0.423).
- The study used an oral pipetting method without antibiotic pre-treatment to establish gastrointestinal K. pneumoniae infection in mice, with therapy administered once daily for four days.
- Antibiotic-resistant K. pneumoniae has reached up to 70 percent global drug resistance rates with infection-related mortality rates ranging 40-70 percent, driving demand for new antimicrobial agents like recombinant bacteriocins.

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