Telavancin accumulates in cultured macrophages and is active against intracellular S. aureus

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Background: Telavancin (TLV) is a novel bactericidal agent, against Gram-positive bacteria. It is a highly bactericidal glycopeptide towards extracellular bacteria, accumulates in macrophages, and displays significant bactericidal activity against intracellular S. aureus. This suggests that it may become a drug of choice for treating Gram-positive infections, especially those for which eradication may be critical.

AIM OF THE STUDY

To study the capacity of telavancin to accumulate in phagocytic cells (macrophages) → CELLULAR PHARMACOKINETICS

To evaluate the activity of telavancin against intracellular S. aureus (as compared to its activity against extracellular bacteria) → CELLULAR PHARMACODYNAMICS

METHODS

Pharmacokinetics: J774 mouse macrophages were exposed to 14C-telavancin for up to 24 h, washed in ice-cold NaCl 0.9 %, collected by scraping, and lysed by sonication. Telavancin cell content was determined by scintillation counting, and expressed by the protein content of this sample (2).

Pharmacodynamics: Extracellular activity against S. aureus ATCC 25923 (fully susceptible strain) was determined by CFU counting after a 24 h incubation in culture medium. Intracellular activity was determined by CFU counting after a 24 h incubation in culture medium. Intracellular activity was determined by CFU counting after a 24 h incubation in culture medium. Intracellular activity was determined by CFU counting after a 24 h incubation in culture medium.

REFERENCES


CONCLUSIONS

• Telavancin accumulates slowly but steadily in macrophages and expresses bactericidal activity against intraphagocytic S. aureus.

• Telavancin intracellular activity may be worthwhile to be further explored in vivo models and in appropriate clinical trials.