

Intracellular activity of antibiotics against *S. aureus* internalized by human skin keratinocytes: comparison with THP-1 macrophages

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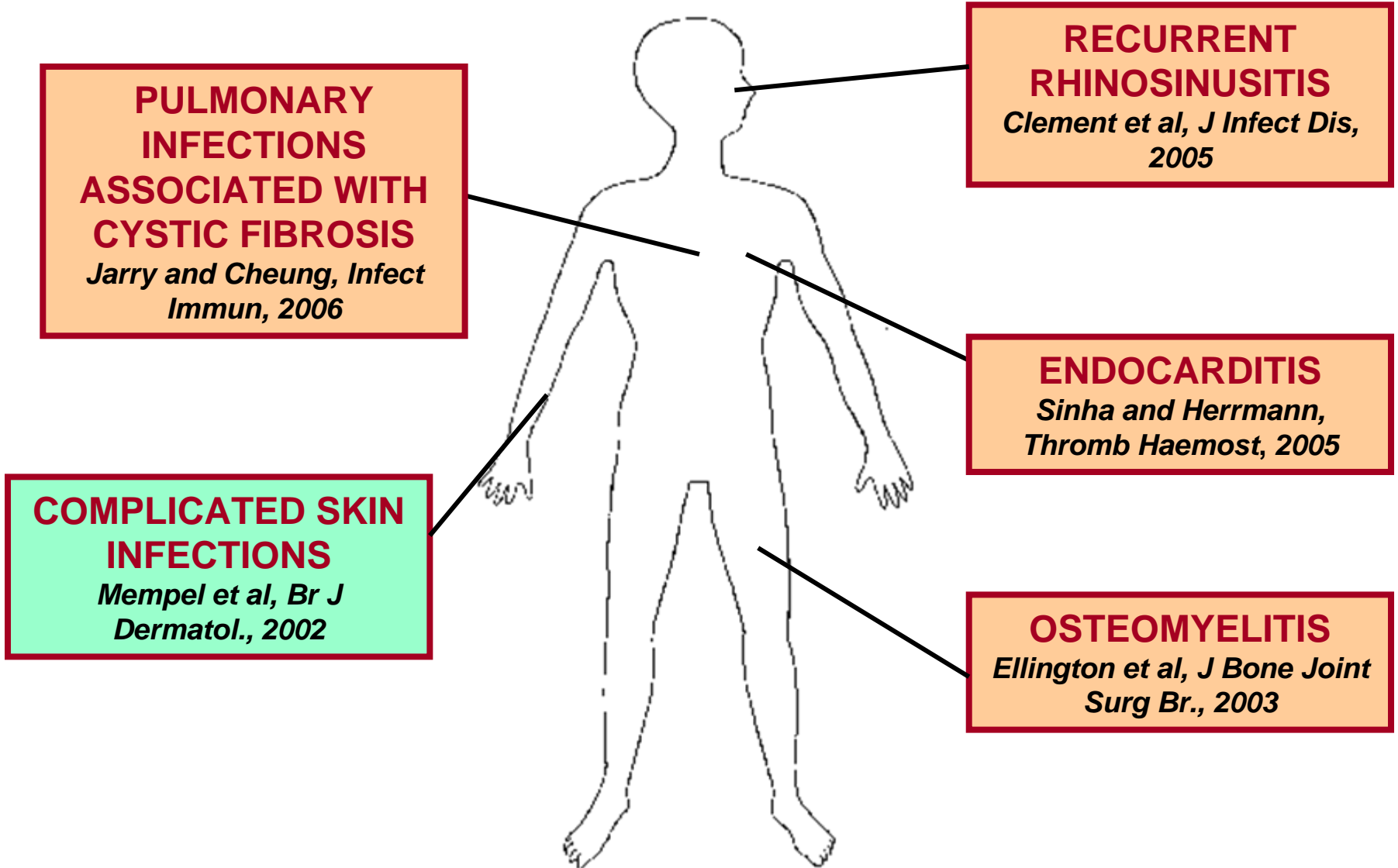
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**Intracellular *S. aureus* is a reality ...
and you need antibiotics to treat them ...**



Intracellular *S. aureus*



Aim of the work

Evaluation of the activity of antibiotics against intracellular forms of *S. aureus* (strain ATCC 25923):

- in **pertinent** cellular models of infection (phagocytes vs. skin keratinocytes)
- following a **pharmacological** approach (dose-response studies)

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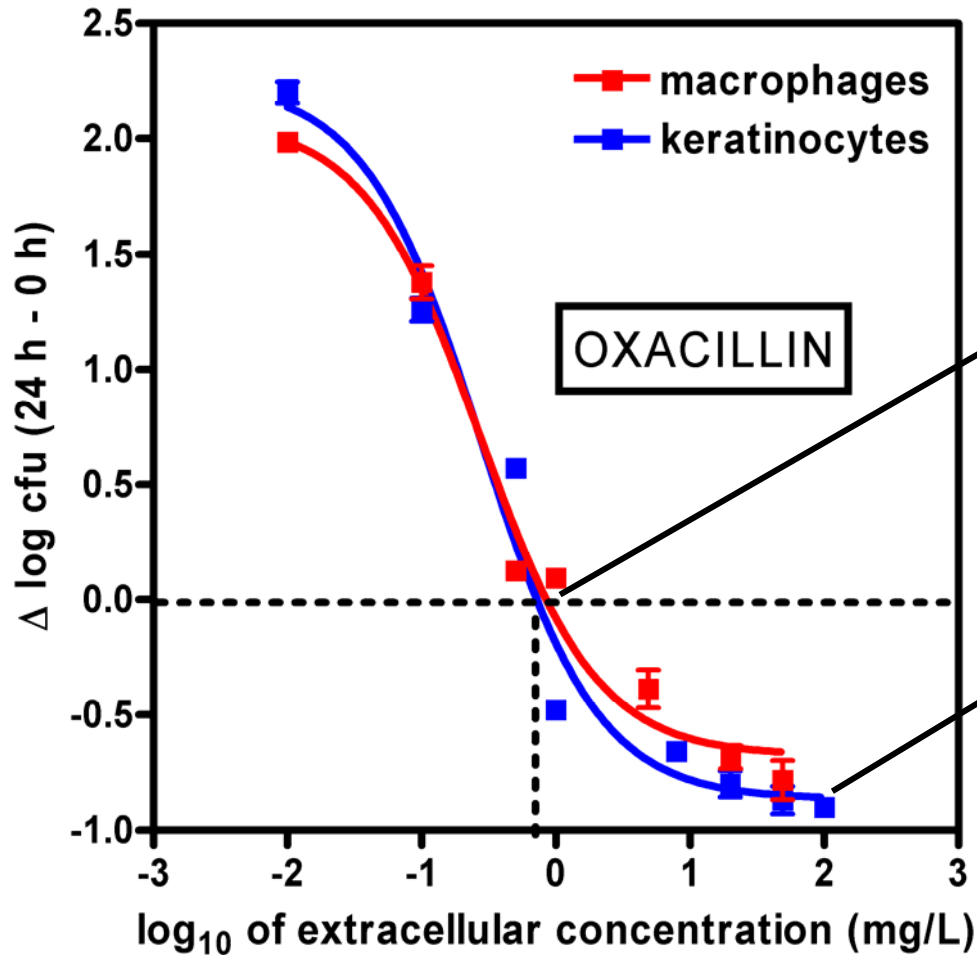
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Pharmacodynamic Evaluation of the Intracellular Activities of Antibiotics against *Staphylococcus aureus* in a Model of THP-1 Macrophages

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Dose-response studies

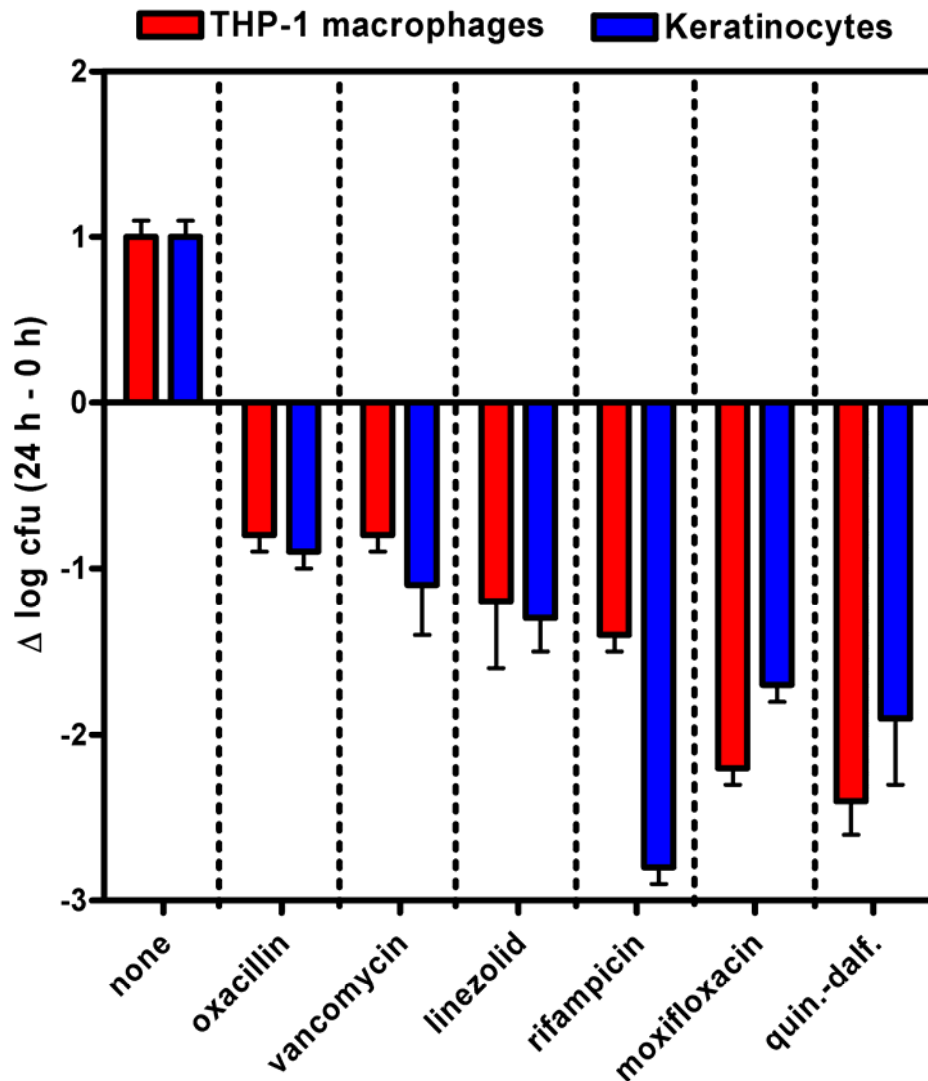


Pharmacological parameters were similar in both cell types

Static dose: ~ 0.7 mg/L

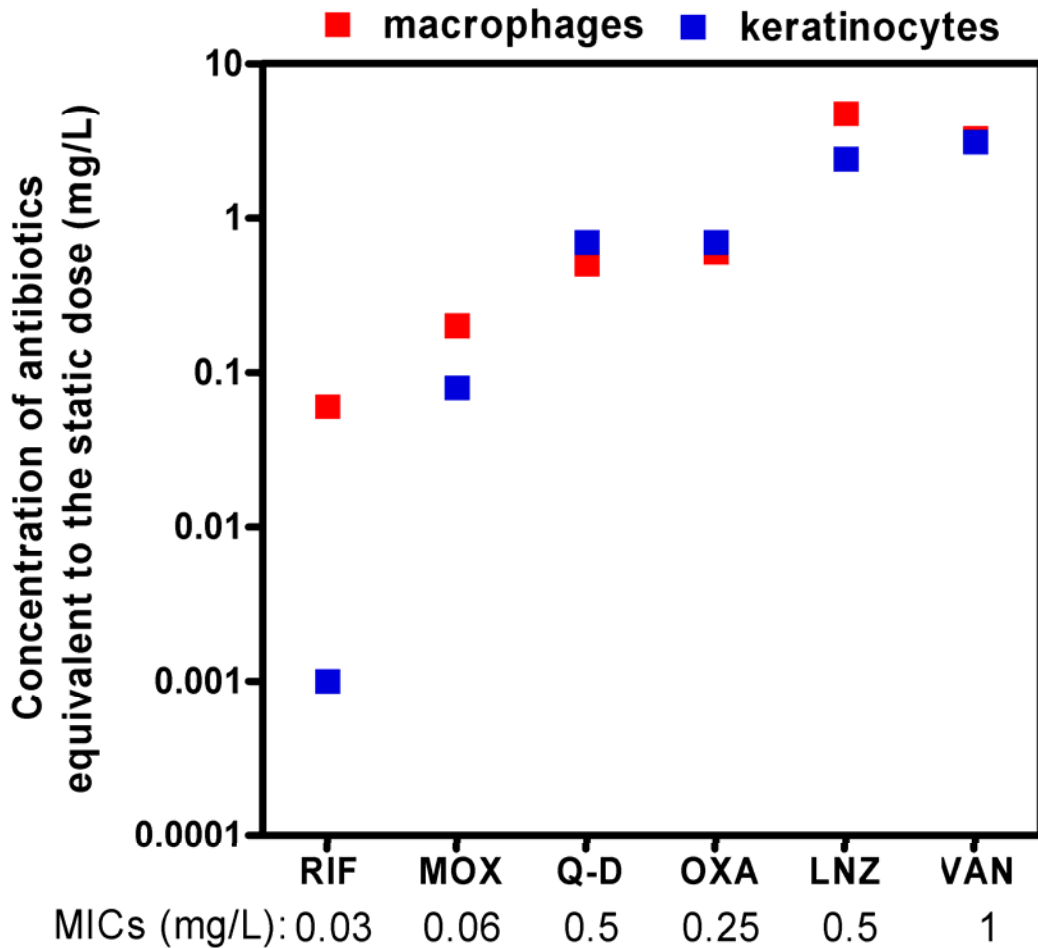
E_{max}: ~ - 0.9 log cfu (24h)

Emax values



- Similar effects in both cell types for all drugs, except for rifampicin
- Poor activity of oxacillin, vancomycin, linezolid against intracellular *S. aureus*
- Extensive intracellular activity of moxifloxacin, rifampicin, and quinupristin-dalfopristin

Static doses



- Similar effects in both cell types for all drugs, except for rifampicin
- Extensive activity of rifampicin and moxifloxacin, probably in relation with their low MICs values and their ability to readily accumulate within cells
- Poor activity of linezolid and vancomycin

Conclusion

- Pharmacological parameters were similar in both cell lines (keratinocytes, macrophages) for all drugs, except for rifampicin (more active in keratinocytes)
- In both models, rifampicin, moxifloxacin and quinupristin-dalfopristin show the largest intracellular activity
- These models could be used for fast screening and quantitative assessment of novel antibiotics active against intracellular *S. aureus*