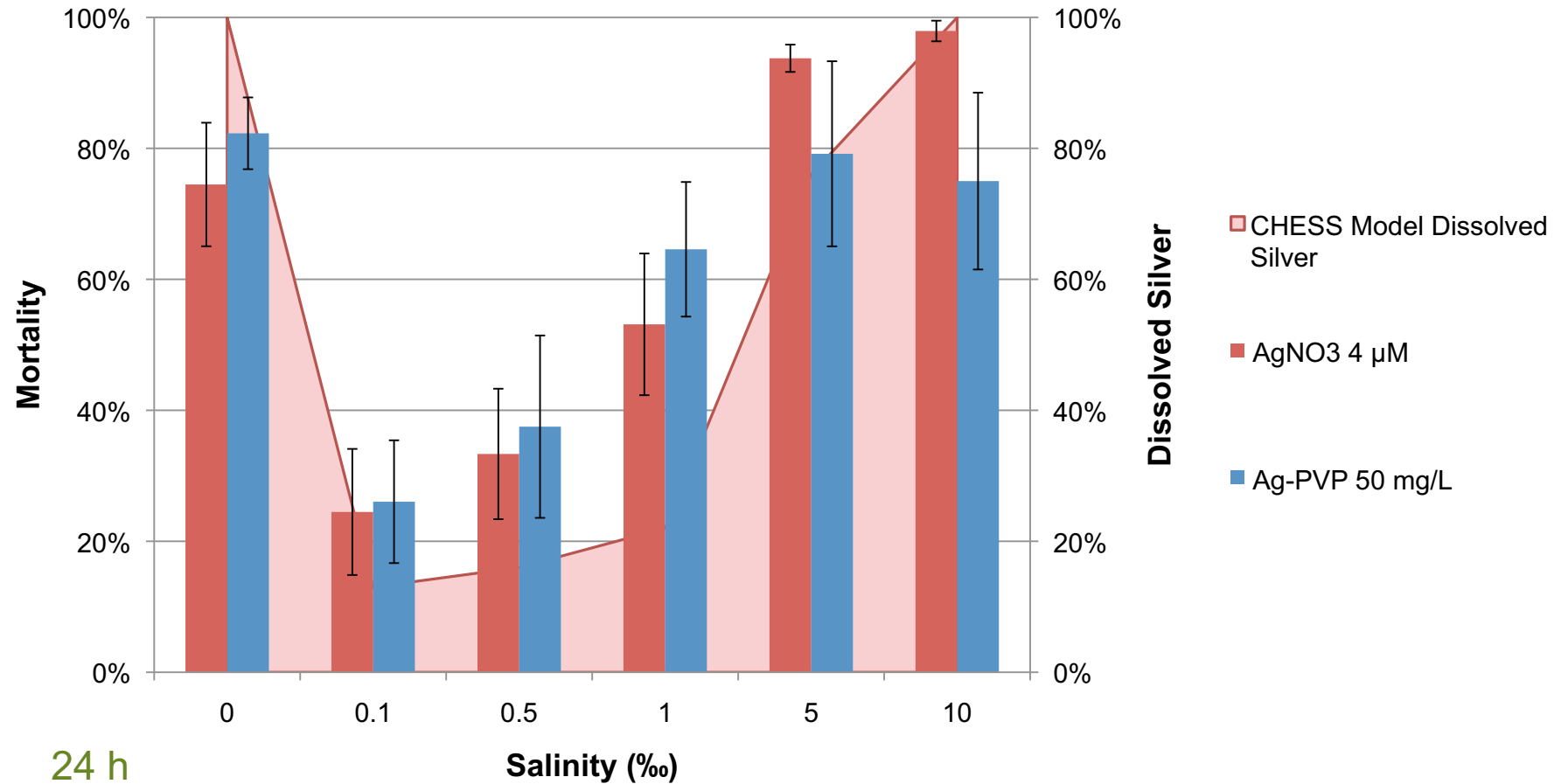
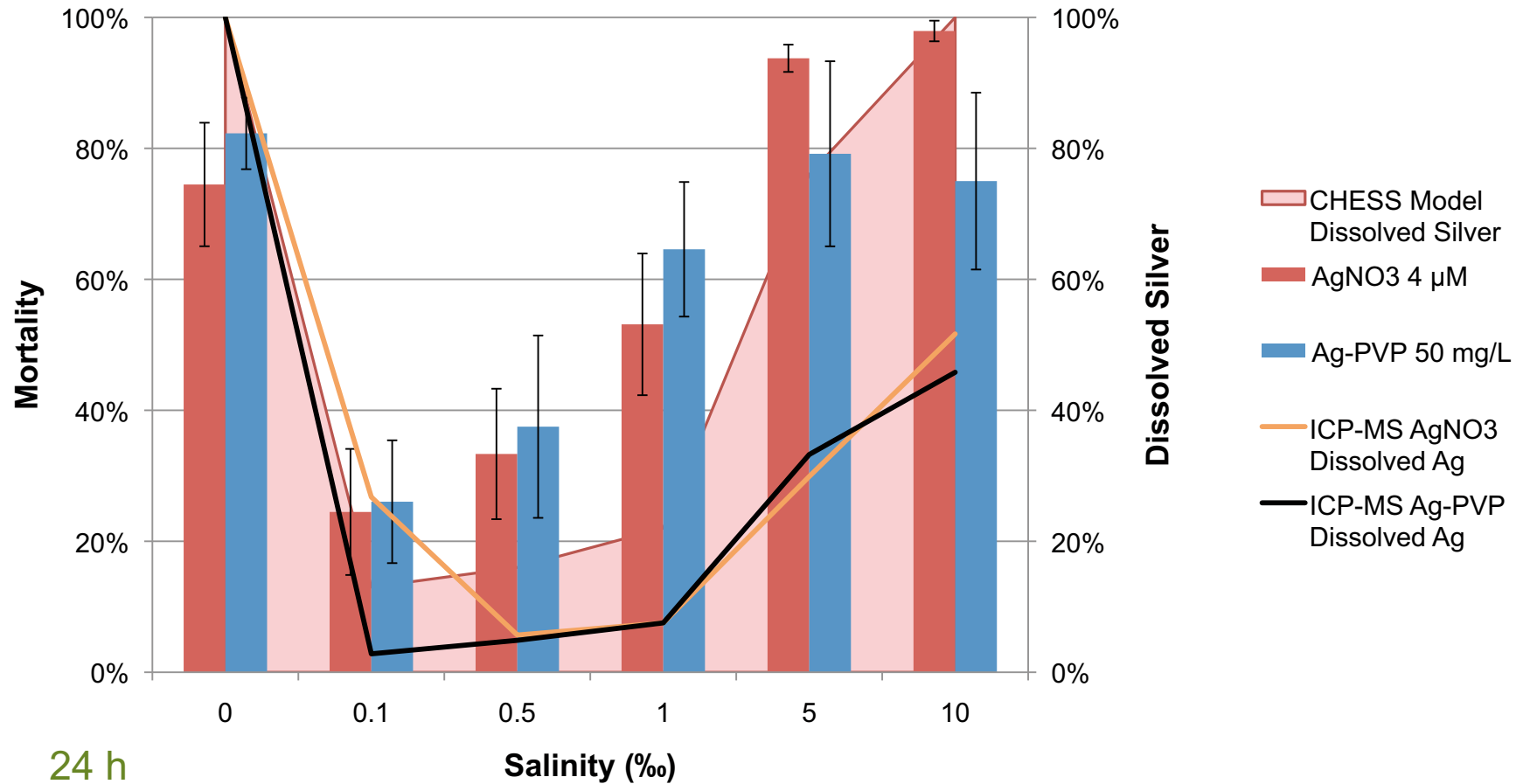


Toxicity and Silver Speciation

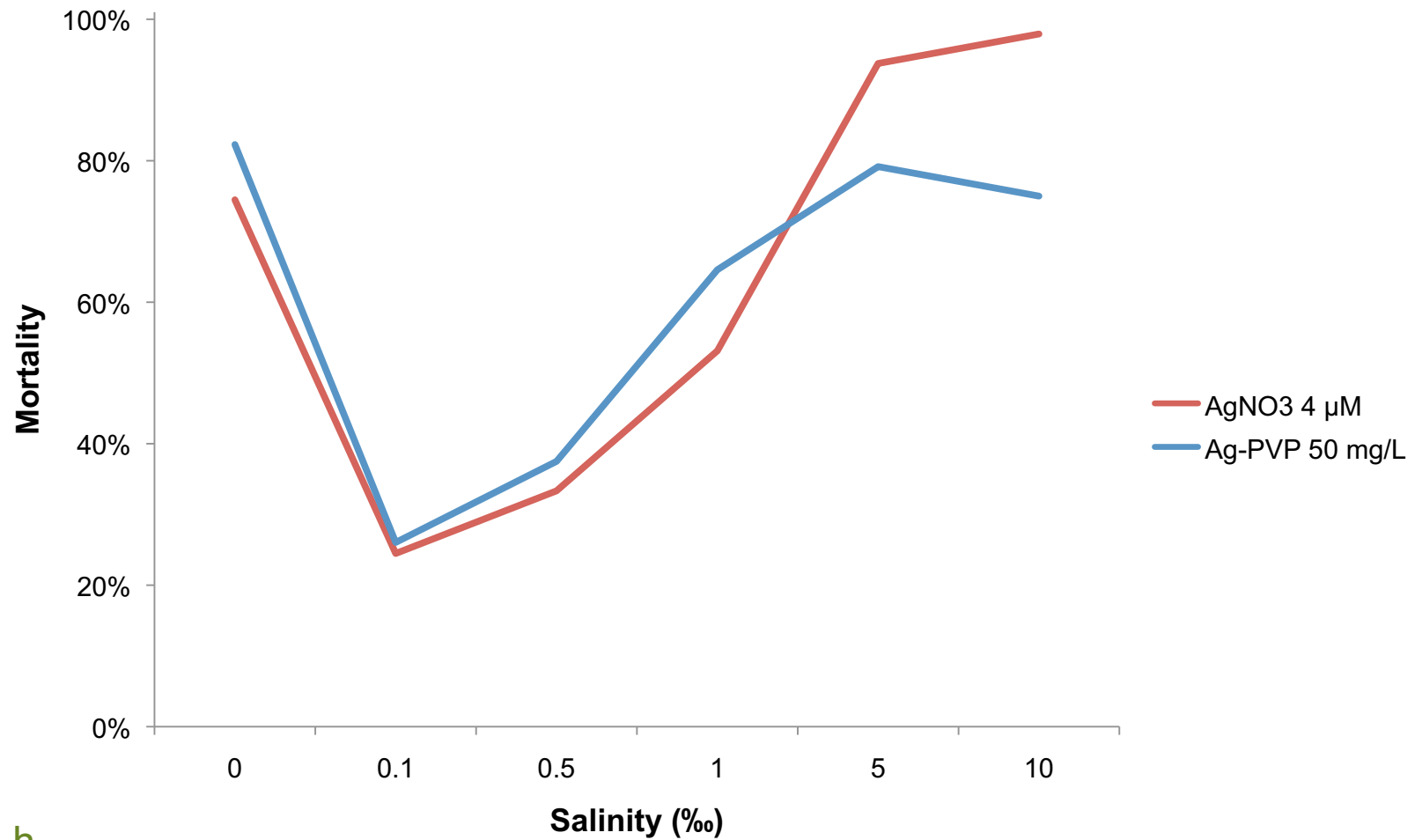


24 h

Toxicity and Silver Speciation

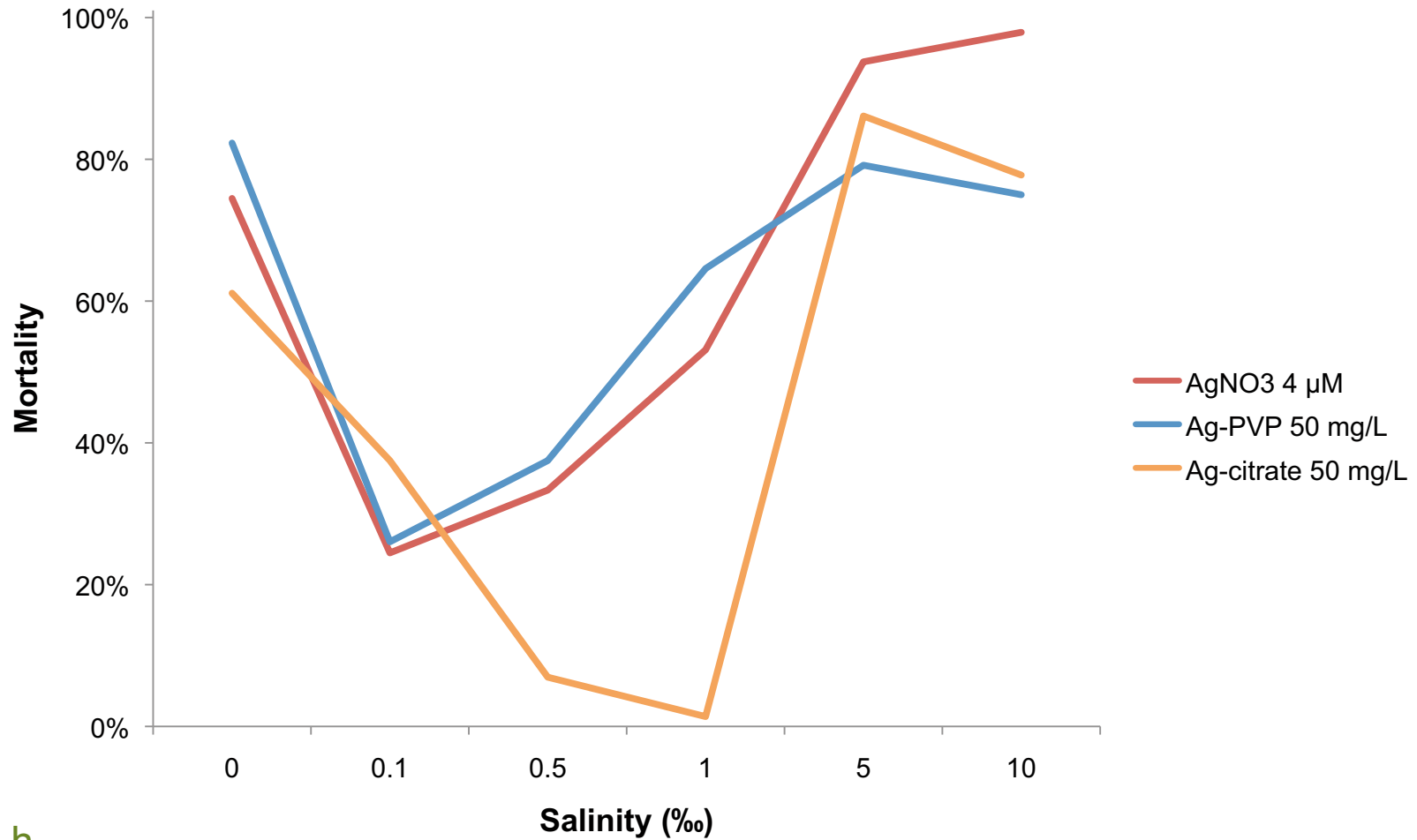


Effect of Particle Coating on Toxicity



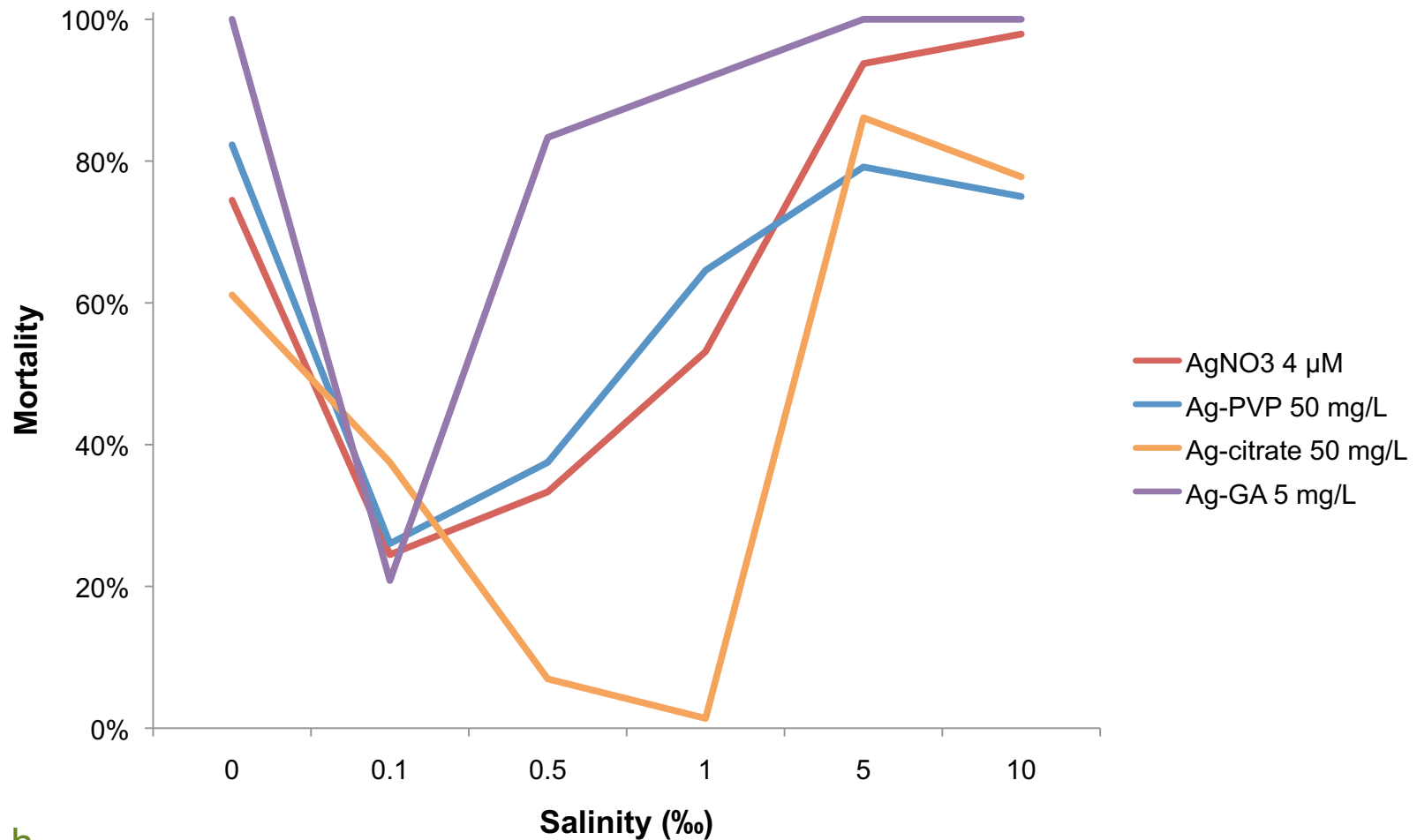
24 h

Effect of Particle Coating on Toxicity

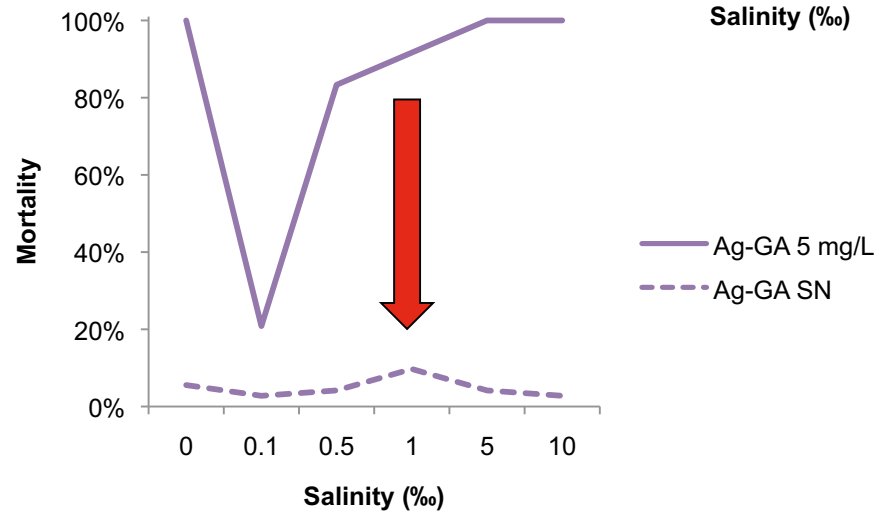
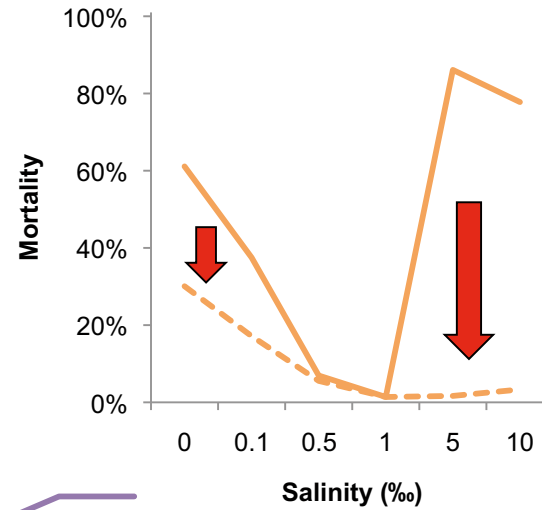
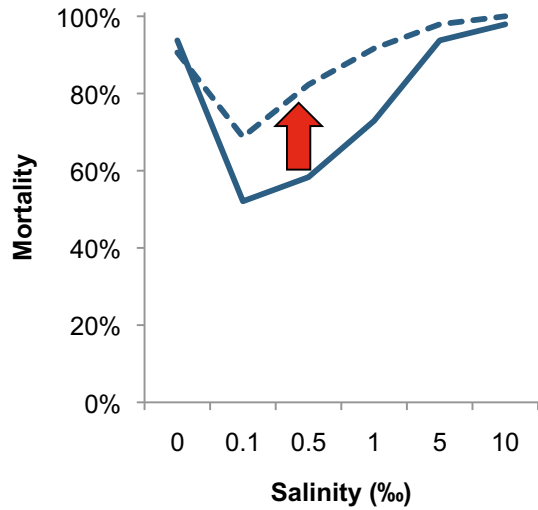


24 h

Effect of Particle Coating on Toxicity

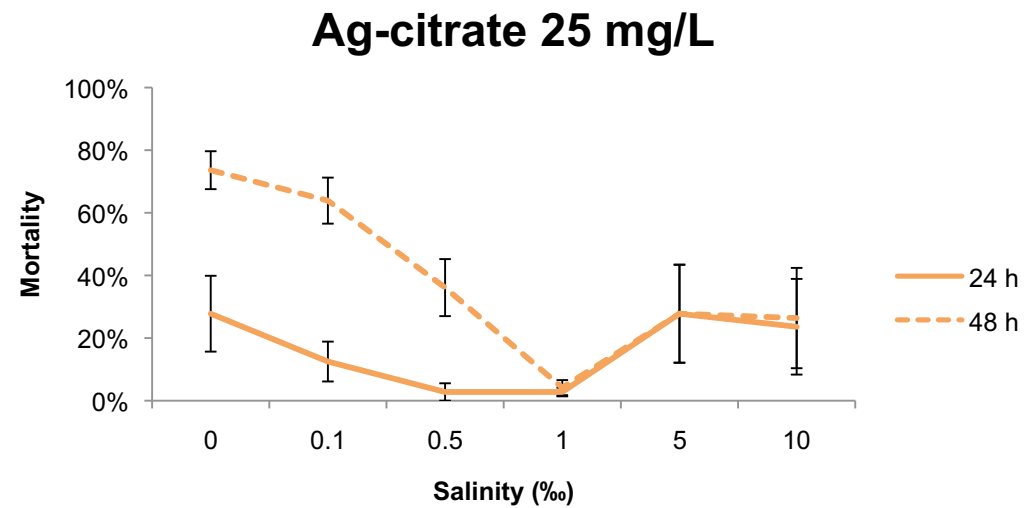
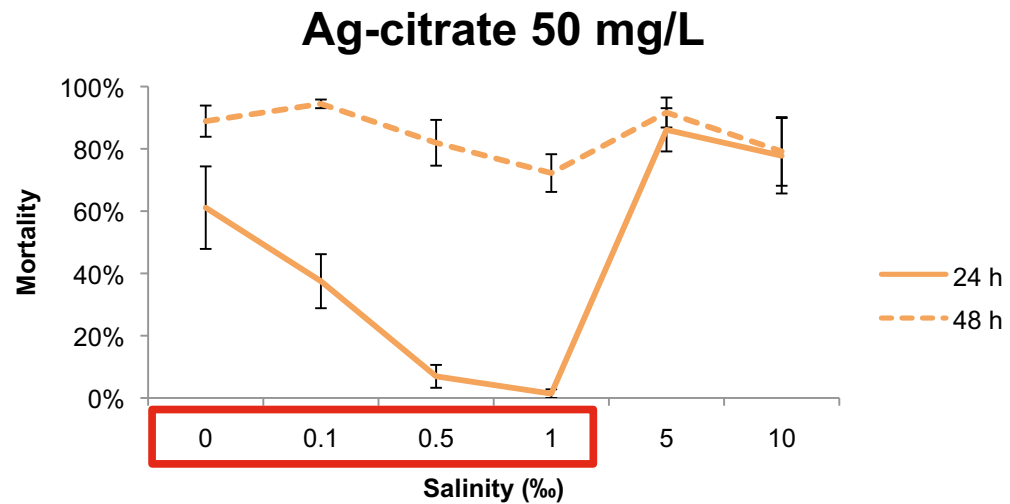


Particle Effects?



24 h

Ag-citrate Embryotoxicity in *Fundulus*



Conclusions

Particles are embryotoxic, but only at mg/L concentrations

Dissolved silver has a significant role in “particle” toxicity

Particle coating has a significant effect on particle behavior and toxicity

Current silver risk assessment assumptions may underestimate Ag-np risk

Acknowledgments

Duke University

- Mariah Arnold
- Jie Liu
- Yingwen Cheng
- Ashutosh Chilkoti

U. Kentucky

- Jason Unrine
- Paul Bertsch

CEREGE

- Perrine Chaurand

CEINT, NSF, and EPA
for research funding

