BSM Blends Dosing Experiments: Toxicology using *Ceriodaphnia dubia*

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C. dubia

BSM Blends Dosing Experiments: Toxicology using *Ceriodaphnia dubia*

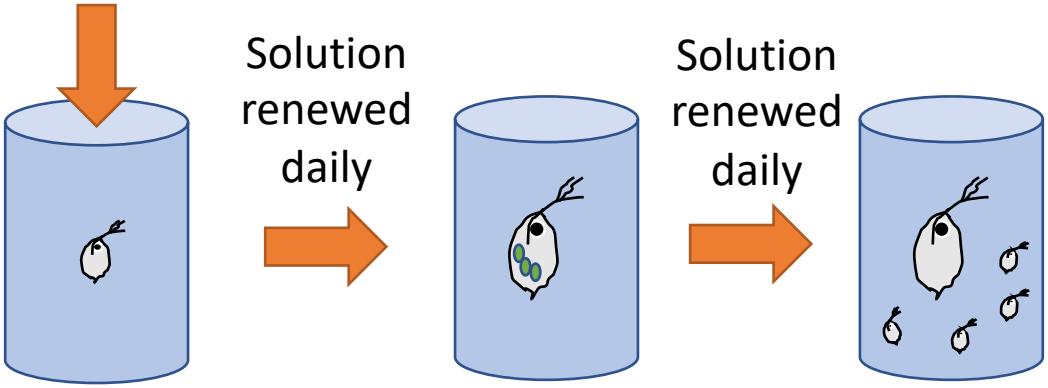
Day 0:
1 neonate

Solution renewed daily

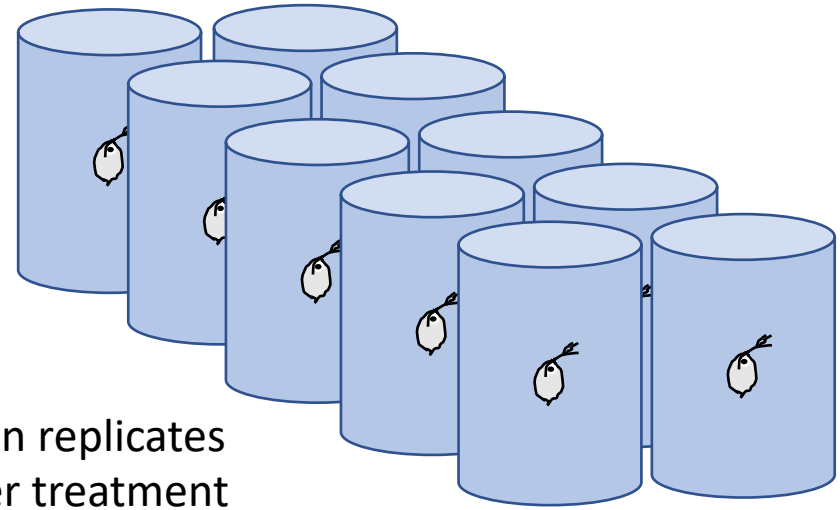
Day 3:
Mature

Solution renewed daily

Day 4-8:
Reproduction



- Babies counted daily and removed
- Neonate production summed across 8 d



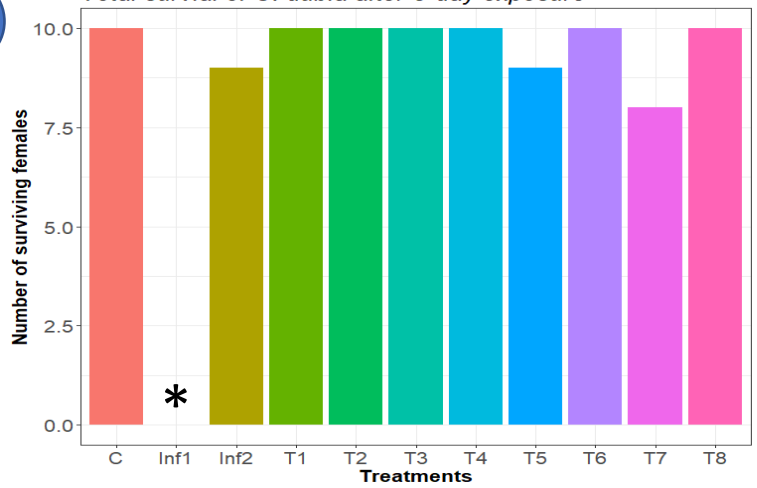
Ten replicates per treatment

At end of experiment average:

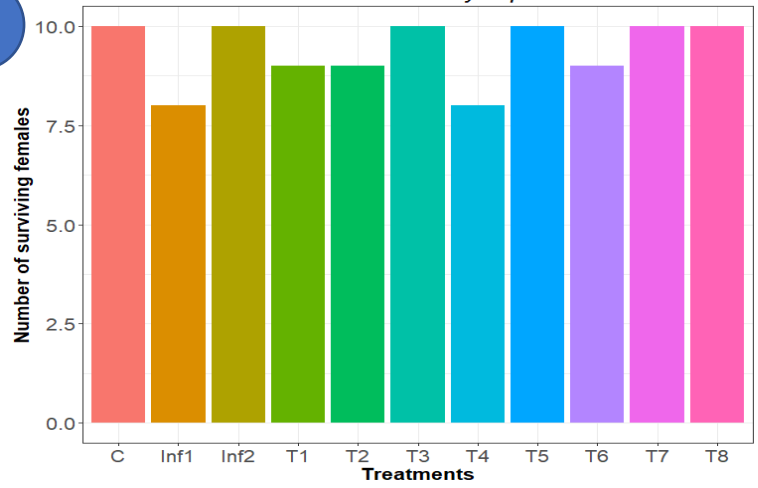
- Survival of original neonate
- Reproduction per female

BSM Blends Dosing Experiments: Survival of *Ceriodaphnia dubia*

1



2



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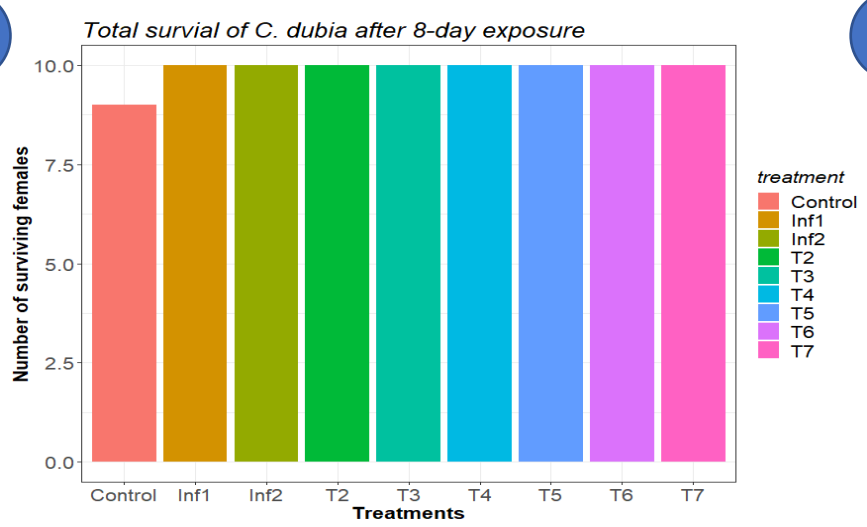
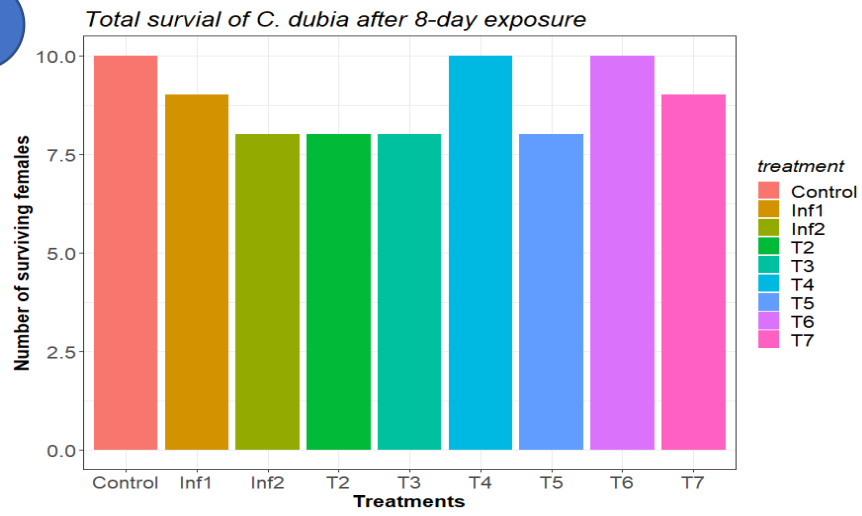


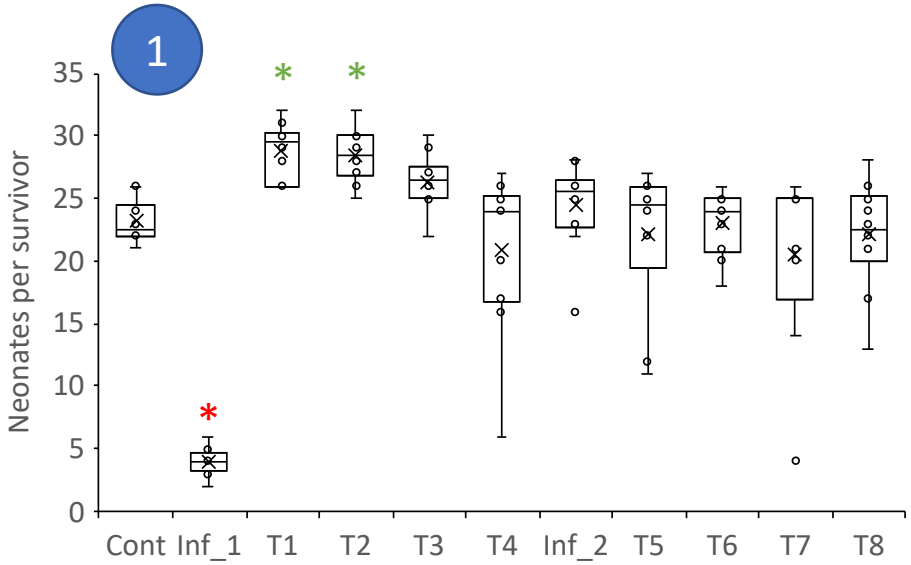
4

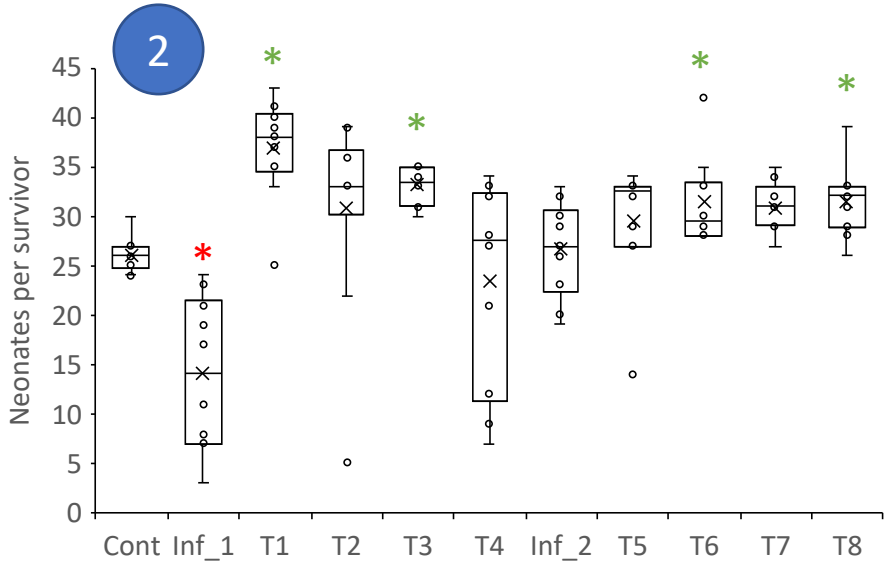


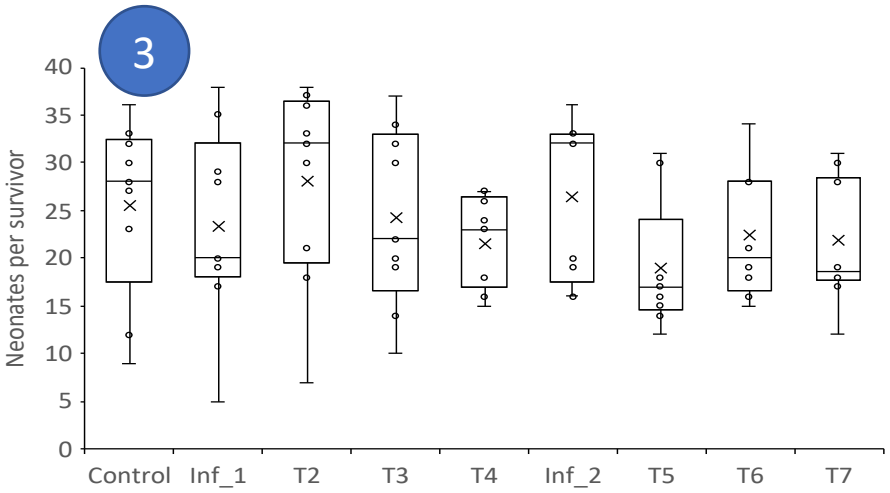
Overall	Mortality of all *C. dubia* from Dosing 1 Day 1 influent (not Day 2) Survival not statistically reduced by any other influent water

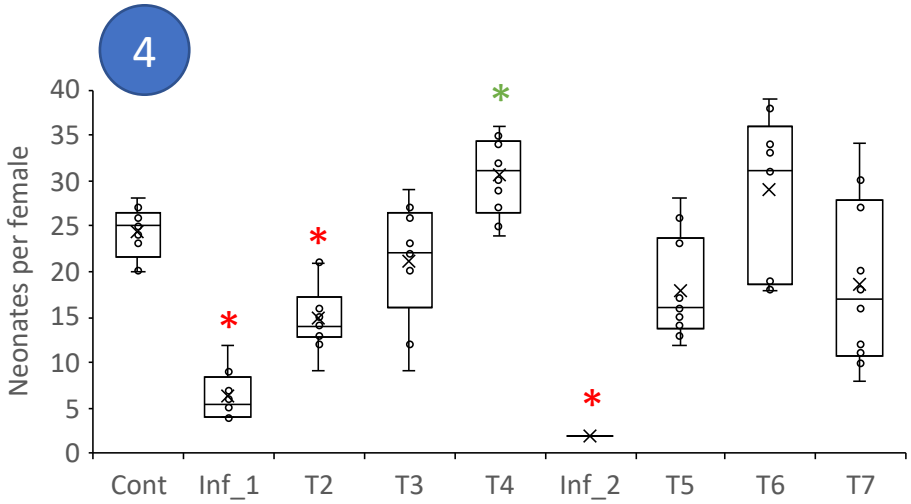
BSM Blends Dosing Experiments: Reproduction of *Ceriodaphnia dubia*

Effluents from several media actually stimulated reproduction, even when the influent water was toxic (decreased reproduction)









High variability in controls; but tests require too much water to repeat

When 'pushed', T2 could not completely prevent toxicity

BSM Blends Dosing Experiments: Reproduction of *Ceriodaphnia dubia*

Summary of Reproductive Impacts

- 50% of the influent waters were toxic to *C. dubia* reproduction
- There were differences in toxicity of the influent water used on Day 1 versus that held over to use on Day 2
- Three of the Day 1 influents were toxic but Day 2 influent was toxic only for Dosing 4 (and was more toxic than Day 1 influent)
- Neither influent water was toxic for Dosing 3
- Effluent from the various media tended to promote reproduction; this could be hormesis whereby very low concentrations of some contaminants can be beneficial to an organism, or the increased reproduction could be due to the presence of an additional food source in the effluent (e.g. bacteria)
- Media did not appear to contribute toxicity to effluent waters (no toxicity of effluents for non-toxic influent)
- When influent water was toxic, media generally had a similar ability to prevent toxicity
- When 'pushed' with a highly toxic storm event (Dosing 4), T2 did not perform as well as the other media

Conclusions

- Media do not leach compounds toxic to *C. dubia* reproduction
- T2 may work less well than the other media at preventing toxicity