

Effect of salts on the deadly amphibian chytrid fungus *Batrachochytrium dendrobatidis*

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ABSTRACT

The amphibian chytrid fungus *Batrachochytrium dendrobatidis* (*Bd*) is a parasitic fungus that infects and kills amphibians worldwide. *Bd* causes electrolyte imbalance by destroying the keratin in the skin and causes cardiac arrest. Past studies have shown that *Bd* growth and motility can be inhibited by increased NaCl concentrations. In most studies, NaCl is the only type of salt used but *Bd* is exposed to other types of salts. In North American wetlands, runoff from road salts during winter and spring when *Bd* hosts (amphibians) often experience high levels of infection prevalence. This study investigated how different road salts at various concentrations affect the growth and motility of *Bd*. We predict that *Bd* growth will be inhibited more by road salts that contain more de-icing chemicals such as CaCl₂ and that *Bd* growth will be the greatest in salts that are more environmentally friendly, such as Beet salt. *Bd* was reared in NaCl, CaCl₂, and Beet salt at concentrations of 0.5, 1.0, 1.5, and 2.0 ppt. Growth was then quantified through counting and measuring of the area of growth and compared across treatments. *Bd* growth is greater in the absence of any salt than in the presence of either Beet salt, CaCl₂, or NaCl. *Bd* growth at 14C was greater than at 22C. Our findings suggest several types of roads salts may have negative effects on *Bd* life history traits that could translate to lower infections in amphibians. Future studies should explore how road salts affect amphibians exposed to road salts, and how infection dynamics change when both host and pathogen are in the presence of these salts.

KEYWORDS

Chytridiomycosis, road salts, frogs, salt