Cutaneous Skin Bacteria: A Search for Antifungal Activity

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Batrachochytrium dendrobatidis (Bd) is a chytrid fungus that is contributing to amphibian population declines and extinctions across the globe. Although more research has been done on Bd in recent years, many amphibian species remain unstudied in terms of the antifungal symbiotic bacteria that may be living on their skin. This experiment identifies whether previously unstudied species of amphibians have symbiotic skin microbes that protect them against the pathogenic fungus Bd. For this study, cutaneous bacteria was obtained from skin swabs of three captive amphibians, and bacterial isolates were subcultured to achieve a pure culture. Zoospores were isolated from a liquid culture of Bd, and co-culture challenge assays were performed for each bacterial isolate with zoospores and a whole culture. Zones of inhibition of each of trial for all of the assays were measured at the narrowest point with a ruler. Using the zones of inhibition, a one-way ANOVA test and Tukey HSD test were performed to determine the statistical significance of the antifungal properties of each bacterial isolate. Approximately 66% of the isolates showed significant inhibition at the selected 0.05 level, and each amphibian species had at least one of these antifungal microbes. This suggests that the species studied may be naturally protected against infection of Bd, thus not being at risk of extinction.

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