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Aquatic host microbiome & pathogen defence interactions between arthropods and microorganisms

¹*Vikram Badgujar*

Associate Professor, Department of Biotechnology Engineering, SSBT College of Engineering & Technology, Bambhori, Jalgaon, Maharashtra, India

^{*2}*Prema Shilvate*

³*Mujahid Anwar Sikhri*

^{2,3}Lecturer, Department of Biotechnology Engineering, SSBT College of Engineering & Technology, Bambhori, Jalgaon, Maharashtra, India

**Corresponding Author: Prema Shilvate
 Mail: premas.41395@gmail.com*

Abstract:

The microbiota that lives in and on a host is crucial for immunity as well as defense against infections. When aquatic animals interact with ambient bacteria, the pool of potential symbionts is changed, which may or may not have consequences for host microbiome assembly or disease resistance. Fungus-causing amphibian illness and tadpoles. Bromeliad micro ecosystems were used to evaluate the indirect effects of arthropod-bacteria interactions on host microbiome assembly and pathogen load, with *Batrachochytrium dendrobatidis* as a model host-pathogen system. Arthropods influenced the construction of the host microbiome by altering the bacterial pool in the surrounding environment. In instance, symbiotic relationships between arthropods with bacteria reduced the prevalence of transient bacterial colonization of a host and increased the prevalence of antibiotic components within aquatic bacterial populations. Fungal infection rates in tadpoles were found to have the strongest link with arthropod-mediated patterns affecting microbiome formation, despite the fact that arthropods were reported to reduce ambient fungal zoospores. Based on these findings, it appears that the cascading benefits of arthropods in maintaining the protective host microbiome may have a stronger correlation with host health than the negative consequences of arthropods on pools for pathogenic zoospores. This research shows that healthy ecosystem dynamics are intrinsically linked to the normal functioning of host micro biomes, suggesting that changes to ecosystems, such as the removal of arthropods, may have far-reaching effects on host-associated bacterial pathogen defenses.

Keywords:

Amphibian; Arthropod; *Batrachochytrium Dendrobatidis*; Chytridiomycosis; Disease; Host microbiome.