



A Comparative Study of Bacteria Associated with Coral Mucus in Different Reef Settings in Sri Lanka

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Microbial communities associated with corals are essential for maintaining reef health. While beneficial microbes support host functions, opportunistic pathogens emerge under environmental stress. Coral mucus acts both as a protective barrier and a nutrient source for pathogenic bacteria. This study was carried out to investigate bacterial communities associated with healthy and diseased corals across three reef settings in Sri Lanka: the natural reef at Pareiwella, Tangalle; the in-situ coral nursery at Beruwela and the ex-situ coral nursery at the Pro Green Laboratory, University of Moratuwa. Coral health was assessed by calculating the Coral Health Index (CHI). Coral mucus samples were collected using the syringe aspiration technique (in-situ coral nursery, n =15; natural reef, n =15) and by experimental fragmentation (ex-situ coral nursery, n = 9), followed by bacterial isolation on TCBS agar and MacConkey agar. In the in-situ coral nursery, *Shigella* sp. and coliform colonies were isolated on MacConkey agar (9.15×10^4 CFU/mL), from *Acropora* sp. with no *Vibrio* sp. detected on TCBS agar, indicating the absence of *Vibrio* sp. in apparently healthy corals. In the ex-situ nursery, bacterial colonies were isolated on both selective media (TCBS agar = 2.96×10^5 CFU/mL; MacConkey agar = 1.36×10^5 CFU/mL). The Coral Health Index values recorded for the three *Acropora* sp. (sp.1 = 0.71, sp.2 = 0.68, and sp.3 = 0.79) indicated moderate coral health following fragmentation. Natural reef environment showed relatively healthy conditions (CHI = 0.87–0.94). A high abundance of *Vibrio* sp. was isolated from diseased *Pocillopora* sp. (1.3×10^7 CFU/mL) and *Porites* sp. (1.5×10^8 CFU/mL). Among the diverse *Vibrio* sp. isolated from the mucus of diseased *Pocillopora* sp. and *Porites* sp. that were associated with tissue loss, *Vibrio alginolyticus* was identified through colony morphology and biochemical tests.

Keywords: Coral mucus, Coral Health Index, *Vibrio*, *Acropora*, *Pocillopora*, *Porites*