

Prevalence of coral diseases in the coastal waters of Kota Kinabalu: The potential of microbial and environmental agents

ABSTRACT

Aims: The Indo-Pacific coral populations are under increasing threats from bleaching events and coral disease outbreaks. However, there is a significant gap in data and research on coral diseases in Malaysian waters. This study aimed to assess the prevalence of coral diseases and signs of compromised health at 27 reef sites in the coastal waters of Kota Kinabalu, Sabah.

Methodology and results: We conducted coral surveys using the Coral Video Transect (CVT) method and measured the prevalence using Coral Point Count with Excel Extension (CPCe) software. Our findings indicated that the majority of reefs appeared healthy ($82.9\% \pm 1.8$), while a smaller percentage displayed signs of disease ($5.0\% \pm 0.6$) or compromised health ($12.1\% \pm 1.5$). Reef sites exposed to higher levels of human activities exhibited a greater prevalence of coral diseases (e.g. yellow band disease, ulcerative white spots and skeletal eroding band) and signs of compromised health (e.g. sediment necrosis, skeletal damage and algal overgrowth). A total of 51 scleractinian hard coral genera were affected, with *Porites* and *Acropora* being the most predominantly affected by sediment necrosis and skeletal damage, respectively. A review of molecular approaches identified various coral pathogens, including *Vibrio* spp., which could potentially contribute to the occurrence of coral disease.

Conclusion, significance and impact of study: Unsustainable coastal development with unregulated human activities can exacerbate the severity of coral diseases and signs of compromised health. Therefore, effective management plans by relevant authorities are required to sustainably manage coral reefs in Kota Kinabalu.