Spatio-temporal, environmental factors, and host identity shape culturable-epibiotic fungi of seaweeds in the Red Sea, Egypt

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Abstract:

The study of fungal species diversity from marine algae is in its infancy; as now no studies have been carried out on the distribution and diversity of fungi on the surfaces of marine macroalgae where all fungal-algal interactions tend to begin. The aim of this study was to isolate and describe the culturable part of mycobiota associated with the surface of benthic marine macroalgae (epiphytic or epibiotic fungi). This is an important step in understanding their abundance, diversity and factors influencing their variability and composition. The fungal community was dominated by Ascomycetes (89%) with Eurotiales as the most abundant fungal order followed by Capnodiales, Pleosporales, and Hypocreales, while Zygomycetes was less frequent. The nature of occurrence of fungal genera on different macroalgal hosts suggests that a mix of generalists framework applies to fungal epiphytes of seaweeds, but the abundance of fungal taxa varied among ecological functional groups of algae, as well as macroalgal taxonomic groups, which imply host filtering. The fungal assemblages were also characterized by temporal variation with variation in temperature, pH, and salinity as the most important abiotic factors. The structure of fungal assemblages showed high beta diversity and low similarity between hosts.

Keywords:

Marine macroalgae • Marine fungi • Beta diversity • pH • Salinity • Temperature

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