

Mycobiome in the gut: a multi-perspective review

ABSTRACT

Human gut is home to a diverse and complex microbial ecosystem encompassing bacteria, viruses, parasites, fungi, and other microorganisms that have an undisputable role in maintaining good health for the host. Studies on the interplay between microbiota in the gut and various human diseases remain the key focus among many researchers. Nevertheless, advances in sequencing technologies and computational biology have helped us to identify a diversity of fungal community that reside in the gut known as the mycobiome. Although studies on gut mycobiome are still in its infancy, numerous sources have reported its potential role in host homeostasis and disease development. Nonetheless, the actual mechanism of its involvement remains largely unknown and underexplored. Thus, in this review, we attempt to discuss the recent advances in gut mycobiome research from multiple perspectives. This includes understanding the composition of fungal communities in the gut and the involvement of gut mycobiome in host immunity and gut-brain axis. Further, we also discuss on multibiome interactions in the gut with emphasis on fungi-bacteria interaction and the influence of diet in shaping gut mycobiome composition. This review also highlights the relation between fungal metabolites and gut mycobiota in human homeostasis and the role of gut mycobiome in various human diseases. This multiperspective review on gut mycobiome could perhaps shed new light for future studies in the mycobiome research area.