1. Introduction

Species of the benthic dinoflagellate Gambierdiscus Adachi & Fukuyo (Adachi and Fukuyo, 1979) are known to produce the polyether neurotoxins, Gambiotoxins and Ciguatoxins (Litaker et al., 2017). The toxins are transferred via food chains, transformed and bioaccumulated in higher trophic levels, and cause ciguatera fish/shellfish poisoning in human. The toxins enter marine food webs by foraging of herbivores on the biotic substrates like macroalgae that host the toxic dinoflagellates. Interaction of Gambierdiscus and their macroalgal substrate hosts is believed to shape the tendency of substrate preferences and habitat specialization. This was supported by studies that manifested epiphytic preferences and behaviors in Gambierdiscus species toward different macroalgal hosts. To further examine the supposition, a laboratory-based experimental study was conducted to examine the growth, epiphytic behaviors and host preferences of three Gambierdiscus species towards four macroalgal hosts over a culture period of 40 days. The dinoflagellates Gambierdiscus balechii, G. caribaeus, and a new ribotype, herein designated as Gambierdiscus type 7 were initially identified based on the thecal morphology and molecular characterization. Our results showed that Gambierdiscus species tested in this study exhibited higher growth rates in the presence of macroalgal hosts. Growth responses and attachment behaviors, however, differed among different species and strains of Gambierdiscus over different macroalgal substrate hosts. Cells of Gambierdiscus mostly attached to substrate hosts at the beginning of the experiments but detached at the later time. Localized Gambierdiscus-host interactions, as demonstrated in this study, could help to better inform efforts of sampling and monitoring of this benthic toxic dinoflagellate.