

ABSTRACT

The emergence of antimicrobial resistant strains and the increasing risk of encountering novel pathogens with epidemic or pandemic threats are the main drives for the discovery of new antimicrobial compounds such as fucoidan, a sulfated polysaccharide found in brown algae. Fucoidan possesses many bioactivities at various degrees due to its high structural and compositional diversity. In this study, the author aimed to analyze the antimicrobial activities of fucoidan from brown algae, specifically towards seasonal IAV, through experimental lab and systematic review. From the experimental lab, seasonal IAV was collected from volunteers with one of the samples suspected to be influenza A(H1N2) after analysis with qRT-PCR. However, the sample failed to be propagated in allantoic fluid and cell culture and thus required re-passaging. Crude fucoidan (0.2%, 94.4 mg dry weight) with no toxicity up to 1000 µg/mL in HEK-293T cells was also extracted from brown algae *Sargassum* spp. using acid extraction method. A systematic review on antimicrobial activities of fucoidan from brown algae *in vitro* and *in vivo* was conducted by following PRISMA guidelines. From the findings, it was concluded that the antimicrobial effects of fucoidan vary based on the structure and monosaccharide composition (e.g., sulfate, fucose, and uronic acid) as well as the species, strain, and structure of the pathogen.