

Culture conditions for optimal growth of actinomycetes from marine sponges

Abstract

Actinomycetes are filamentous gram-positive bacteria that can be found abundantly in both terrestrial and marine environment. These bacteria are known as producers of many bioactive compounds through the production of secondary metabolites for their survival and adaptation in nature and have been widely used today as therapeutic agents. Marine actinomycetes have been the focus of research over the past decade for new drugs discovery due to its unique adaptation in the harsh sea environment. It is believed that marine actinomycetes could produce compounds that are rare and unique compared to the terrestrial actinomycetes. Despite its potential, marine actinomycetes are critically difficult to culture in laboratory because these actinomycetes live in extreme environment in the sea with high salt concentration, high pressure, low temperature, and constant pH changes of seawater in its natural environment. Hence, in this study, optimum condition to culture marine actinomycetes was achieved by culturing the marine actinomycetes from marine sponges on different culture condition such as different types of isolation media, pH, seasalt concentration, temperature, and incubation time. Starch casein agar (SCA) is shown to be the best isolation media compared to actinomycetes isolation agar (AIA) and Kuster agar (KUA). The growth of marine actinomycetes is optimum at pH 7, 40 % of seasalt concentration, 20–30 °C and 7–10 days of incubation time.