Isolation of actinomycetes from coastal soils against aquatic animal pathogenic bacteria

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Abstract

Actinomycetes is the gram-positive bacteria distributed in the natural habitats and mostly found in soils. It is the important bacteria that can produce antibiotics used for agriculture. In this study, fifty-five actinomycetes were collected from coastal soils in Rayong and Nakhon Si-Thammarat province on the gulf of Thailand. Actinomycetes were isolated by serial dilution and spread on humic acid-vitamin agar and inorganic salts starch agar (ISP-4) supplemented with cycloheximide and nalidixic acid. Among of actinomycetes 6, 13, 23 and 12 isolates were collected from coastal soils in Laem Mae Phim beach, Saeng Chan beach, Suan Son beach in Rayong province and Sichon beach in Nakhon Si-Thammarat province, respectively. Total fifty-five actinomycetes were tested for the inhibited antimicrobial activities against the aquatic animal pathogen strains Vibrio parahaemolyticus, V. harveyi and Streptococcus agalactiae by agar spot test method on tryptic soy agar (TSA) supplemented with 1.5% NaCl (w/v). Among 7 isolates showed antimicrobial activity against S. agalactiae. SIO_003 had the highest inhibition zone with the diameter 4.08±0.14 mm. Two isolates followed by S0_017 and J10_006 which had inhibition zones of 3.91±0.42 and 3.31±0.19 mm. However, no exhibit growth in both V. parahaemolyticus and V. harveyi which were gram-negative bacteria.

Keywords: actinomycetes, coastal soils, pathogenic bacteria