4. Screening of novel bioactive compounds from actinomycetes in deep-sea water of Izu-Akazawa.

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1. Introduction

Microbial secondary metabolites have various bioactivities such as anticancer and antibacterial activities. The pharmaceutical industry has developed drugs by using these metabolites as lead compounds. However, it is becoming difficult to discover a novel compound from terrestrial bacteria because of the previous huge amount of screening. Therefore, we have focused on deep-sea water (DSW) in Toyama bay as a new source of isolation and screening of actinomycetal bioactive compounds [1)].

We compared Toyama bay with Izu-Akazawa using secondary metabolites profiling and phylogenetic analysis of 94 DSW: derived actinomycete strains. We found 4 strains producing the same candidate compound as a structurally new compound. In this study, we selected strain AKA109 as the best producer of the compound and conducted isolation and determination of the structure.

2. Method

Strain AKA109 was inoculated into K-1 flasks each containing 100 mL of V-22 seed medium were incubated on a rotary shaker for 4 days. The seed culture was transferred into K-1 flasks each containing 100 mL of A-16 production medium were incubated on a rotary shaker for 7 days. After incubation, the culture broth was extracted with 1-butanol. The crude extract was subjected to silica gel column chromatography, ODS column chromatography, and HPLC purification. The structures of the two isolated compounds were determined using NMR and MS spectroscopic analysis.

3. Result and Discussion

We isolated two compounds which were identified as antibiotic A-76356 [2)] and its new analog. These compounds have unique nitrogen-containing functional group. Our result suggests that DSW of Izu-Akazawa can be a useful source of screening of novel compounds [3), 4), 5)]. Currently, we are studying determination of the absolute configuration, biosynthetic origin, bioactivity and structure of another metabolites.

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3) *Bull. Chem. Soc. Jpn*. 34: 1633-1639 (1961)

4) *J. Antibiot.* 39. 601-602 (1986)

5) *J. Antibiot.* 42. 329-332 (1989)