

Special Seminar



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Professional Experience:

- April 2009 - up to now: Curator, Culture Collection Division, Biological Resource Center, National Institute of Technology and Evaluation
- October 2006 - March 2009: Staff, Resource Collection Division, Biological Resource Center, National Institute of Technology and Evaluation
- April 2004 - September 2006: Staff, Planning Division, Department of Biotechnology, National Institute of Technology and Evaluation

Award:

July 2017: Skerman Award (Young Scientist Award), World Federation for Culture Collections

September 2015: Hamada Award (Young Scientist Award), Society for Actinomycetes Japan

Service activity:

August 2014 - up to now: Secretary, Subcommittee on the Taxonomy of the Suborder *Micrococccineae*, International Committee on Systematics of Prokaryotes.

November 2011 - July 2014: Committee member, Subcommittee on the Taxonomy of the Suborder *Micrococccineae*, International Committee on Systematics of Prokaryotes

Education:

September 2012: Ph.D. in Medical Engineering: Integrated School of Medicine and Engineering, University of Yamanashi.

March 2004: B.S. in Agriculture: Department of Applied Biology, Faculty of Textile Science and Technology, Shinshu University.

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Isolation and taxonomy of non-filamentous actinobacteria from seashore environments

Introduction:

Non-filamentous actinobacteria (hereinafter called actinobacteria) are known as taxa which contain many industrially useful strains such as enzyme-, amino acid- and vitamin-producing strains and persistent chemical-degrading strains. Therefore, the discovery of novel actinobacteria from natural environments is important because it contributes toward an understanding potential as biological resources for industrial applications. However, discrimination of actinobacteria based on their colony and cell morphologies is very difficult, and studies on the selective isolation for actinobacteria are also few. Therefore, it is difficult to obtain diverse actinobacterial isolates effectively.

Recently, marine environments attract attention as isolation sources of novel microorganisms including actinobacteria. The objectives of this study are to devise an isolation medium for actinobacteria, to obtain novel actinobacterial isolates from seashore environment samples and to clarify the taxonomic positions of candidates of novel species within the order *Micrococcales*.

Materials and methods:

As isolation sources, we used sea sediment, sea sand and various mangrove forest sediment samples collected in Japan and Indonesia. For isolation of actinobacteria, the selective isolation medium, named 'SPPY agar' [5.0 % (w/v) sodium chloride, 0.2 % (w/v) HIPOLYPEPTON (Nihon Pharmaceutical), 0.04 % (w/v) yeast extract (Difco), 0.02 % (w/v) MgSO₄·7H₂O, 0.005 % (w/v) cycloheximide, 0.002 % (w/v) nalidixic acid and 1.5 % (w/v) agar] and the dilution plate technique were used. Identification of isolates was performed based on 16S rRNA gene sequences. In addition, taxonomic positions of some new taxa candidates related to the family *Demequinaceae* were investigated using a polyphasic approach.

Results and discussion:

Using the SPPY agar, more than 700 strains were isolated from 65 samples. Approximately 80 % of the isolates were actinobacteria, and most of them were assigned to the order *Micrococcales*. The genera *Isoptericola* and *Microbacterium* were most abundant and occurred in almost of all samples. Meanwhile, the genera *Lysinimicrobium* and *Paraoerskovia* were occurred only from mangrove-forest sediments and sea sediments, respectively, although many isolates were obtained. In addition, a number of novel species belonging to the order *Micrococcales* could be obtained in this study. In this presentation, I'm going to introduce the diversity of actinobacteria isolated from seashore environments, and also report the result of taxonomic study of the isolates related to the family *Demequinaceae*, along with the results of whole genome sequencing and *in silico* DNA-DNA hybridization.