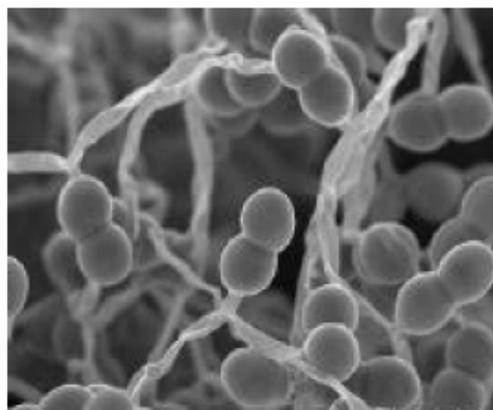


The discovery of the new antibiotic bispolides from *Microbispora*

Through the joint research efforts with the Forest Research Institute Malaysia (conforming to the Convention on Biological Diversity), Nimura Genetic Solutions Co. Ltd. (also known as NGS; Tokyo, Japan), is proud of announcing the discovery of new antibiotic compounds which have been filed for the patent.

The new antibiotics show antibacterial activities against Gram-positive bacteria. They should be characterized by their novel basic structure as well as a good activity against clinically-isolated strains of methicillin-resistant *Staphylococcus aureus* (MRSA) with varieties of antibiotic resistance.

The producing organism was isolated from a soil sample collected at a forest station in the state of Selangor of the Forest Research Institute Malaysia (FRIM). The electron-micrograph (right) shows the characteristic morphology of the producing micro-organism. It is characterized by the formation of bi-spores. Based on phenotypic characteristics and 16S rDNA sequence, the organism was classified as unidentified (probably new) species belonging to the genus *Microbispora*, one of so called rare actinomycetes.



It also turned out that the organism produces several analogous antibiotics. So far, three (named A1, A2 and A3) out of them were identified as new ones based on the physico-chemical properties. The structure of the antibiotics was elucidated to be new 20-membered symmetric macrodiolide antibiotics with two conjugated triene structures by the MS and NMR analyses performed by NGS researchers. This novel compound group was therefore named "Bispolide" on the basis of the characteristic morphology (bi-spore) of the producing organism as well as the common structure of the compounds. Plans have already been in place to carry out detailed researches on the biological properties of bispolides.

It should be noted that both Japanese and Malaysian researchers played key roles in discovering bispolide and its producing organism. This discovery is an evidence for the diversity of Malaysian soil actinomycetes and their secondary metabolites. At the same time, it is a success of NGS-FRIM collaboration model.

Currently, NGS is the only one bio-venture company that has their research facilities inside the FRIM campus in Kuala Lumpur. The company has agreements not only with FRIM, but also with the Sarawak Bio-diversity Centre (SBC) and BioPerak company in the states of Sarawak and Perak, respectively, in Malaysia, in terms of the access rights to carry out research activities on all bio-resources including micro-organisms and plants.

NGS has plans to do collaboration with different organizations as well as research capabilities to carry out various screening programs using its own technologies. The technologies include the isolation and fermentation of micro-organisms as well as the extraction, purification and structure determination of biologically-active substances.

With the capabilities mentioned above, NGS can offer the part of their research facilities to pharmaceutical companies internationally for collaboration. For example, Sankyo has been running collaborative research works.

25 Aug 2006

Nimura Genetic Solutions Co. Ltd.
President
Keiichi KIYOTA

Nimura Genetic Solutions Co. Ltd.
Head office: 1-19-10 Osaki, Shinagawa-ku, Tokyo 141-0032, Japan
Established: Jun 2000
Capital: 299,200,000 yen
Number of employees: 40 (as of November 2005)
Type of business: Exploration and research of beneficial compounds from bio-resources
Subsidiary company: Nimura Genetic Solutions (M) Sdn Bhd (Incorporated in Malaysia)
<http://www.ngs-labs.com>

<Notes>

Although it is well known that microbes produce wide varieties of antibiotic compounds, the antibiotics for clinical use are very limited. The different types of chemotherapy to cure bacterial infections largely rely on the usage of different types of antibiotics derived from β -lactam antibiotics such as penicillin and cephalosporin, aminoglycosides such as kanamycin, macrolides such as erythromycin and others.

However, there are varieties of pathogenic bacteria which may develop resistance to chemotherapeutic drugs and actually become a life-threatening problem, especially to those with weakened immune system due to cancer, surgery, aging, etc. Such life-threatening bacteria include methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), penicillin-resistant *Streptococcus pneumoniae* (PRSP) and multi-drug resistant *Mycobacterium tuberculosis*.

In order to treat or cure infections due to such drug-resistant Gram-positive bacteria, it is a strong need to discover new compounds with new chemical structure, since a limited number of effective antibiotics such as arbekacin (a semi-synthetic kanamycin derivative), vancomycin and teicoplanin (glycopeptide antibiotics) are clinically available for systemic use.