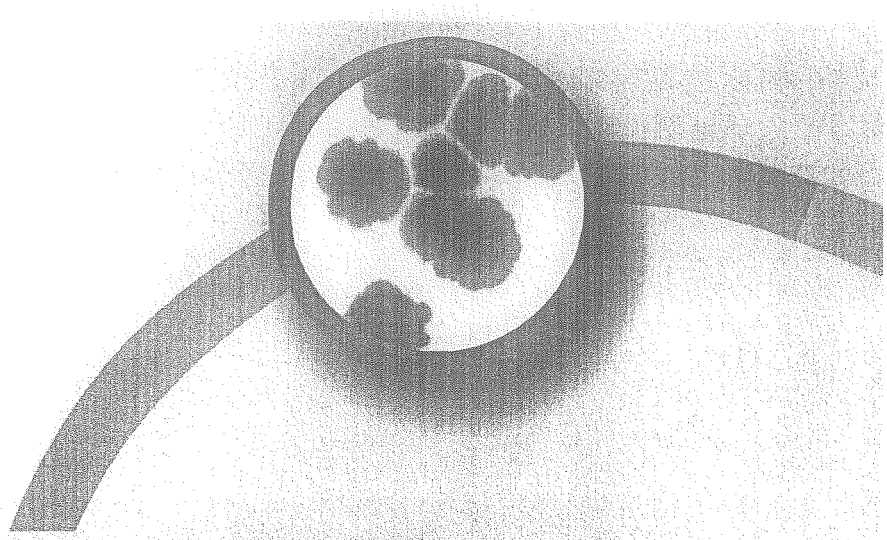
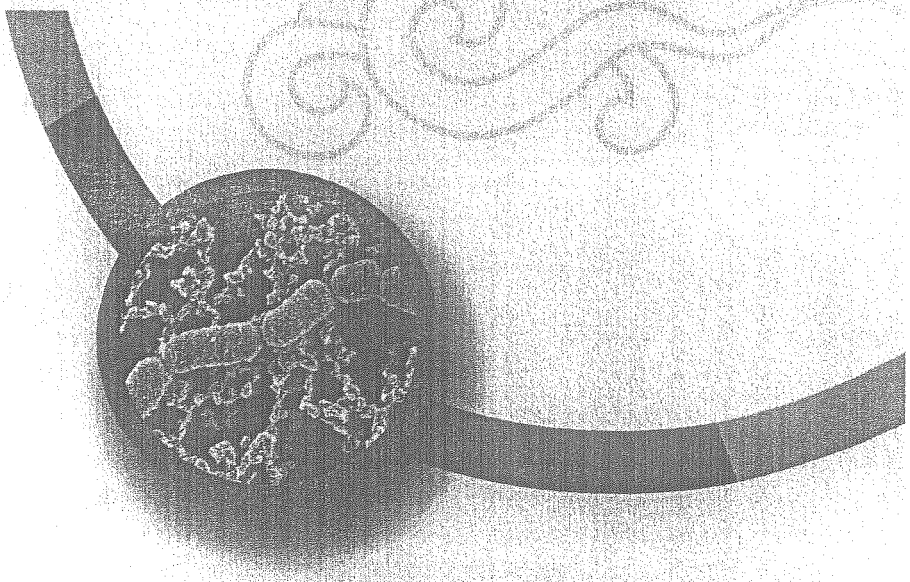


# 2007 International Meeting of the Microbiological Society of Korea

# 2007년도 한국미생물학회 국제학술대회



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사단법인 한국미생물학회 | 한국생명공학연구원

Final Circular

**B040** **Influence of Pulsed Electric Field Generated Around Hot Pepper Plant on Growth and Wilt Diseases**

Byung Kwan Na* and Doo Hyun Park
*Department of Biological Engineering, Seokyeong University*

**B041** **Methodology Study for Classifying Soil Ecological Quality using Microbial Diversity Information**

Dongwon Ki*, Jaejin Lee, and Joonhong Park
*School of Civil and Environmental Engineering, Yonsei University*

**B042** **A New Cultivation Method Development for Antibiotic Resistant Bacteria under Wide Range of Nutrient Levels from Water Samples**

Hyangkyun Oh*, Jaejin Lee, Il Han, and Joonhong Park
*Department of Civil and Environmental Engineering, Yonsei University*

**B043** **Biosorption of Chromium (VI) from Aqueous Solution onto Dead Biomass from Activated Sludge**

Kaliannan Thamaraiselvi[1,2*], Kangsuk Kim[1], Shankar Congeevaram[1], and Joonhong Park[1]
*[1]Department of Civil Environmental Engineering, Yonsei University, [2]Department of Environmental Biotechnology, Bharathidasan University, India*

**B044** **A Possible Natural Alternative to Antibiotics**

Young Ho Kim[1*], Min Hee Kim[1], Yong Nam Kim[1], and Ji Young Kim[2]
*[1]Department of Life Science, The University of Suwon, [2]Department of Life Science, The University of Suwon*

**B045** **Phylogenetic Characteristics of Bacterial Populations in Pine Mushroom (*Tricholoma matsutake*) Habitat Soil and Purification of *Acidobacteria* Phylum**

Yun-Ji Kim[1*]and Kyung-Sook Whang[1,2]
*[1]Institute of Microbial Ecology and Resources, Mokwon University, [2]Department of Microbiology, Mokwon University*

**B046** **Assessment of Fungal Diversity in Western Islands Soil by Amplified Ribosomal DNA Restriction Analysis and Pyrosequencing**

Young Woon Lim[1*], Changmu Kim[2,3], Byung Kwon Kim[2], Jae-Hak Lee[4], Hyo Jin Kim[2], Jongsik Chun[2], and Hack Sung Jung[2]
*[1]Institute of Molecular Biology and Genetics, Seoul National University, [2]School of Biological Sciences, Seoul National University, [3]Division of High-risk Pathogen Research Center, Korea Center for Disease Control and Prevention, [4]Interdisciplinary Program in Bioinformatics, Seoul National University*

**B047** **Biosorption of Chromium and Nickel by Isolated Heavy Metal Resistant *A. niger* [CSR-mbl1], *M. halobius* [CSR- mbl2], *M. varians* [CSR – mbl3] Isolates**

Shankar Congeevaram[1,2*], Sridevi Dhanarani[1], Joonhong Park[2], Michael Dexilin[1], and Kaliannan Thamaraiselvi[1,2]
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## B041

### Methodology Study for Classifying Soil Ecological Quality using Microbial Diversity Information

Dongwon Ki*, Jaejin Lee, and Joonhong Park

*School of Civil and Environmental Engineering, Yonsei University*

For sustainable development, quantitative ecosystem values should be evaluated in the planning of mega-projects. To predict complex ecological behaviors, multi-layered database and integrated evaluation system are required. Compared to animal and plant ecosystem, the classification of soil ecological quality has been poorly established. Microbial communities are essential parts of soil and their activity is important to the soil function. In this study, we tested whether soil microbial diversity could be a good indicator of soil ecological quality. From soil sampling sites in Korea, soil microbial diversity data was obtained using T-RFLP analysis with 16S rDNA primers and restriction enzymes. Any correlation of soil microbial diversity with the ecological and environmental information from available soil DB was analyzed using statistical methods. The found correlation can be used to predict microbial diversity in unmeasured areas, which will be applied in developing a digital map of soil ecology quality.

[Supported by Environment-Friendly & Intelligent Road Design Research Group (05 CTRM D05-01) and Yonsei Univ., Center for Future Infrastructure System, aprogram, Korea]

## B042

### A New Cultivation Method Development for Antibiotic Resistant Bacteria under Wide Range of Nutrient Levels from Water Samples

Hyangkyun Oh*, Jaejin Lee, Il Han, and Joonhong Park

*Department of Civil and Environmental Engineering, Yonsei University*

Infections by antibiotic-resistant microorganisms are dangerous. Typically, microbial risks are assessed by cultivation in nutrient-rich laboratory conditions. In nature, however, microorganisms are exposed to nutrient limitation conditions. The samples may underestimate the risks of microbial activity. The purpose of this research is to develop a new cultivation method to detect antibiotic-resistant microorganisms in a wide range of nutrient levels. To create these oligotrophic, antibiotic-resistant microorganisms, we diluted, by $10^0$-$10^4$ times, a nutrient medium, Luria-Bertani Broth. Then, we added tetracycline (100 ul/ml) to selectively culture antibiotic-resistant bacteria. Using this new method, we evaluated microbial risks in water samples from Han River, municipal and hospital wastewater in Seoul, and "yellow dust" particles of The highest risk was detected in the yellow dust samples, the level of which was compared to the microbial risk in chlortetracycline-fed piggery manure waste samples.

[Supported by Yonsei Univ., Center for Future Infrastructure system, a BK 21 program, Korea and the Natural Hazard Mitigation Research Group, National Emergency Management Agency]

## B043

### Biosorption of Chromium (VI) from Aqueous Solution onto Dead Biomass from Activated Sludge

Kaliannan Thamaraiselvi[1,2*], Kangsuk Kim[1], Shankar Congeevaram[1], and Joonhong Park[1]

*[1]Department of Civil Environmental Engineering, Yonsei University, [2]Department of Environmental Biotechnology, Bharathidasan University, India*

Heavy metals are of major concern due to their toxicity and biomagnification which lead to the control measures. Conventional treatment processes requires high capital and operation costs and hence biosorption of heavy metals by activated sludge biomass provided an alternative technique. The biosorption studies of Cr(VI) on dead bacterial biomass isolated from activated sludge were carried out with varying parameters such as time, biomass concentration, pH and initial metal ion concentration. The adsorption rate constant values were calculated using Lagergren rate equation. Langmuir and Freundlich parameters showed that the Cr(VI) metal ion sorption process is favorable onto biomass. Sorption kinetic data would be useful for environmental technologists in designing treatment plants for heavy metal containing wastewaters. Desorption studies were carried out to elucidate the mechanism of sorption and also for the recovery of metal. Since activated sludge is disposed as waste from industries the resulting dead biomass sorbent is expected to be economically feasible and environmentally safe.

[Supported by a BK21 (Center for Future Infrastructure System, Yonsei Univ.), Korea]

## B044

### A Possible Natural Alternative to Antibiotics

Young Ho Kim[1*], Min Hee Kim[1], Yong Nam Kim[1], and Ji Young Kim[2]

*[1]Department of Life Science, The University of Suwon, [2]Department of Life Science, The University of Suwon*

Bacterial resistance to antibiotics has become a serious medical problem and a concerning matter in the live-stock farming the aquaculture of when they are fed with a mass of Some bacteria can be a resistant against antibiotics as they can be adapted to changing environmental conditions in a continuous process of evolution. This resistance is promoted by both the overuse of antibiotics and insufficiency of dose. Bacteria are becoming a multiple resistance to a range of antibiotics. During the massive farming using a feeding stuff contained with some antibiotics to prevent the infectious disease, they are exposed to the over-dosed antibiotics. Thus meat consumers are easily endangered by indirect contamination with antibiotics residues and/or antibiotic resistant bacteria.

We propose a possible natural alternative antibiotics be able to control the antibiotic resistant bacterial infections in the animal farm or aquacultural farm. This antibiotics alternative, Bio-Mazzal, is composed of a mixtures extracted from some specific plants and sea-weeds. This studies is funded by Mazzee-Bio company.