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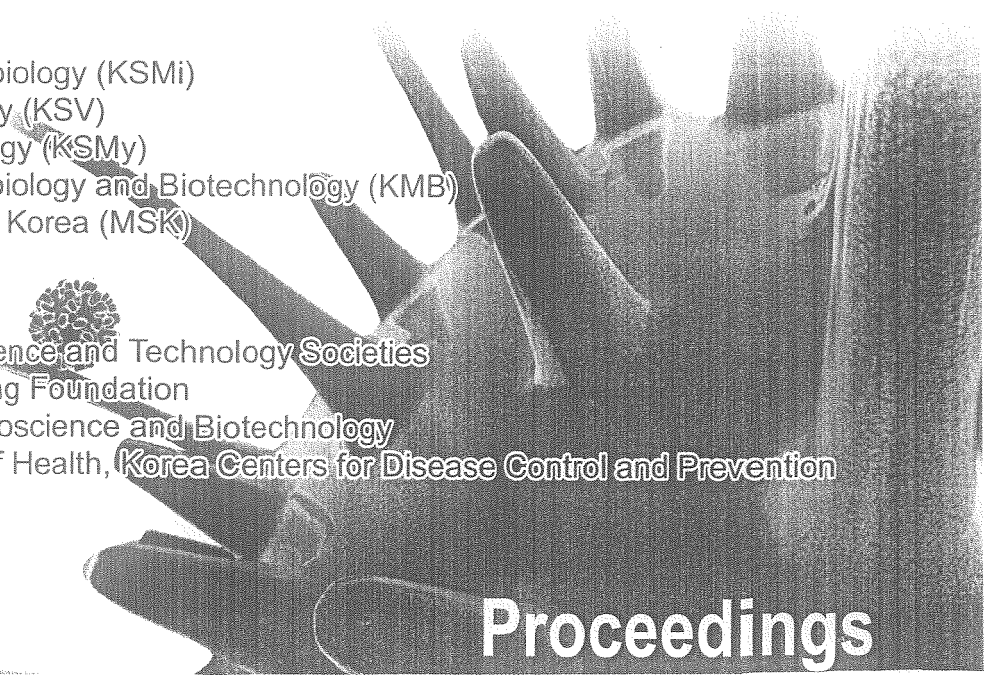
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Proceedings



Cultivation and Characterization of the Lactic Acid Bacterial Strains in Commercial Effective-Microorganism Products, Food-Waste Leachate, and Fermented Livestock Feed

Wan-Taek Im^{1*}, Qing-mei Liu¹, Jin-Li Xu^{1,2}, Eun-Hye Park¹, and Sung-Taik Lee¹

¹Department of Biological Sciences, Korea Advanced Institute of Science and Technology, ²College of Bio and Food Technology, Dalian Polytechnic University, China

The cultivation of lactic acid bacterial strains in commercial-products, food-waste leachate, and fermented livestock feed was carried out by using MRS agar as the growth medium. About 100 isolates obtained from plate spreading experiments performed were identified by comparative analysis of partial 16S rRNA gene sequences. A large proportion of these isolates were identified as genus *Lactobacillus* with high 16S rRNA gene sequence similarity. Commercial effective-microorganism product; M21 and EM showed different microbial community. Many different type of lactic acid bacteria were found in food-waste leachate because of Korean fermented food such as kimchi, cubed radish kimchi etc., where lactic acid bacteria was major population. Among these strains, five strains were distinct from validly published type strains; we performed polyphasic taxonomic studies for placing these strains as taxonomic marker strains. [This work was supported by the 21C Frontier Microbial Genomics and Applications Center Program, Ministry of Science & Technology (Grant MG05-0101-4-0), Republic of Korea.]

Keywords: Lactic acid bacteria, Effective-Microorganism, 16S rRNA gene sequence

Dynamics Among Major Dechlorinating Populations in TCE-Removing Multi-Permeable Reactive Column Experiments

Jaejin Lee^{*} and Joonhong Park

Department of Civil and Environmental Engineering, Yonsei University

Multi-permeable reactive barriers (M-PRBs), in which the first column was packed with granular iron and the second column was filled with the pieces of recycled waste tire inoculated with anaerobic digestion sludge could remove trichloroethene both abiotically and biologically. In zero-valent iron column, higher chlorinated ethenes may degrade to lower chlorinated compounds (DCE or VC) and those intermediates could be further reduced to ethene in the bioreactor in which acetate was fed as an electron donor. In this work, we quantitatively examined dynamics among the major dechlorinating populations in the bioreactor. According to T-RFLP (terminal restriction fragments length polymorphism) for 16S-rRNA, the microbial diversity for the bioreactor was higher than that for the seeding material. The increased diversity might have had positive effects on the stable degradation in the M-PRBs. For detecting major dechlorinators, nested PCR and qPCR were performed using specific 16S-rRNA primers for two well-known dechlorinating bacteria. *Desulfuromonas* in the bioreactor were significantly increased while *Dehalococcoides* were not. The outcompetition of *Desulfuromonas* against *Dehalococcoides* in the low-chlorinated-ethene-degrading condition is different from current perceptions, i.e., *Desulfuromonas* has been regarded as a dechlorinator for PCE or TCE while *Dehalococcoides* for complete detoxification to ethene. (Supported by Korea Ministry of Environment as "Eco-technopia 21 project".)

Keywords: TCE degradation, microbial dechlorination, *Desulfuromonas*, *Dehalococcoides*

Pelletized Plant Residues as Perspective Raw Materials to Prepare Substrate for Wood-inhabiting Medicinal Mushrooms

Ivan Jablonský¹, Zdeněk Blažek², and Václav Šašek³

¹Mendel University of Agriculture and Forestry, Czech Republic, ²VALMYC, Ltd., Czech Republic, ³Institute of Microbiology, Academy of Sciences of the Czech Republic, Czech Republic

Modified waste of different plants (wheat, rape, soy-bean, corn, sweet sorghum and sorrel *Ůleusa-Rumex* sp. hybrid) in the form of small dry pellets was used to prepare substrate for mushroom growing Oyster mushroom *Pleurotus ostreatus*-king oyster mushroom *Pleurotus eryngii*, shiitake *Lentinula edodes*, and viscidi mushroom *Pholiota nameko*. Mushrooms were cultivated in plasticbags, where the pellets were deep into heated water (60-90°C). The material in the closed bags was jumbled and the next day the cooled substrate was inoculated *in situ* thorough the sheet of the plastic bag by mycelium grown on wooden plugs. Mycelium growth rate of mushroom mycelia on different substrates and growing conditions were compared. Water temperature as well as various humidity of the substrate was tested. Yield of *Pleurotus* on substrates treated by the water of different temperature was not affected. Yield of mushrooms was evaluated by % of biological effectivity (BE).

1. Rate of mycelia growth of *P. ostreatus*, *P. eryngii*, *L. edodes* and *P. nameko* on wheat straw pellets was very much alike

2. There were no significant differences between growth rate mycelia and contamination occurrence on substrates treated by different warmed water.

3. Water content in wheat straw substrate between 68-75% did not affected mycelia growth of *Pleurotus* sp. On the other side the yield rise with increased moisture compost up to 189.7 % (BE) at 75% substrate moisture.

4. Pre-treated wheat straw, rape straw and sorrel waste serve as good raw materials for growing of *L. edodes*, *P. eryngii* and *P. nameko*. The quality of harvested straw showed to play a role; the pellets made of unclean straw gave unstable results.

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Keywords: *Pleurotus ostreatus*, *Pleurotus eryngii*, *Lentinula edodes*, *Pholiota nameko*, woodem plugs