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Relationship of Pipe Materials and the VBNC with Culturable Bacteria in a Drinking Water

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Wafers of 3 pipe materials (stainless steel, galvanized iron, and polyvinyl chloride) were used to figure out the influence of pipe materials on VBNC (viable but non-culturable) state and concentration of bacteria in drinking water. Chlorination diminished all HPC (heterotrophic plate count), however a DVC (direct viable count) still existed in the range between 3- and 4-log cells/ml. HPC and DVC were detected both in biofilm and in the effluent. Statistical analysis revealed that pipe material, exposure time, and the season were all relevant to the concentrations of VBNC and HPC bacteria detected. These findings represent the importance of VBNC cells and the type of pipe materials in the development of biofilm in water distribution systems, furthermore they hint that survey of DVC is necessary to evaluate disinfection efficiency and safety of drinking water.

Key words: Viable but non-culturable (VBNC), direct viable count (DVC), drinking water, biofilm, pipe material

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Bacteriocidal Yeasts that Producing Subpeptin JM4-A or Subpeptin JM4-B

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In order to establish yeast cells that produce a bacteriocin, Subpeptin JM4-A or Subpeptin JM4-B, the 50 bp Subpeptin JM4-A and Subpeptin JM4-B genes with start and stop codons were synthesized and cloned into pAUR123, a yeast expression vector. Both transformed yeast cells showed antibacterial activities against *Bacillus subtilis* and *Escherichia coli*. This result indicates that yeast cells that producing Subpeptin JM4-A or Subpeptin JM4-B possess bacteriocidal properties against both Gram positive and negative bacteria. On the other hand, no antibacterial activity was detected by using yeast cells that harboring pAUR123. In this study, we successfully established bacteriocin producing yeast cells that could be used as food preservative or antibiotics. [This work was supported by the Ministry of Commerce, Industry and Energy, Grant number 7000885. Min-Kyung Jang and Ok Hee Lee were supported by Brain Busan 21 Project.]

Key words: Bacteriocin, Subpeptin JM4-A, JM4-B, *Saccharomyces cerevisiae*, yeast