# P 07 - Vancomycin Resistance Genes Reservoired and Disseminated in Surface Waters

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**Abstract**
Antibiotics are extensively used to prevent or to treat microbial infections in human and veterinary medicine. Most of these compounds are partially metabolized by patients and are then discharged to hospital sewage or to municipal wastewater. Resistant bacteria themselves are included in this discharge and are emitted into sewage or manure and other environmental compartments. Through surface runoff and leaching, antibiotics and their metabolites can be transported to surface water and groundwater. Worldwide, the introduction of wastewater effluent into drinking water aquifers is a critical undertaking to meet the potable water need of heavily populated areas. The increased reuse of treated wastewater has been mirrored by increased concern that antibiotics, resistant bacteria, and antibiotic resistant genes are being introduced into the drinking water systems. The glycopeptide antbiotics vancomycin and teicoplanin are usually used in the treatment of infections caused by gram-positive bacteria. However, some bacteria possessing van resistance genes (vanA, B and C) are resistant to these antibiotics. Therefore, in this study, water samples collected from a river searched for vancomycin and teicoplanin-resistant bacteria. Out of 290 isolate 18 isolates were found to be resistant for both antibiotics. After identification of the resistant isolates by 16S rRNA sequencing the isolates were further investigated for both van genes and D-alanine- D-lactate ligase protein through PCR and SDS-PAGE analyses. The presence of D-alanine-D-lactate ligase protein (38 kDa) and vanA gene (732 bp) was successfully shown in all of the resistant isolates (Fig. 1 and 2, respectively). Our further studies about the transferability of van genes among species are under progress.

**References**
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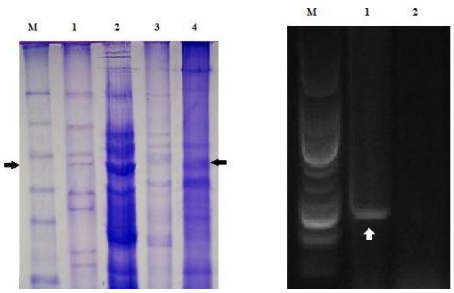
**Figures**
Figure 1. SDS-PAGE analysis of D-alanine-D-lactate ligase. M, Protein Marker (175 kDa); Lane 1, E. faecalis (positive control); Lane 2, E. coli (negative control); Lane 3, P. plecoglossicida; Line 4, R. planticola. Arrows indicate D-alanine-D-lactate ligase protein (38 kDa).

Figure 2. PCR analysis of vanA gene. M, DNA Marker (1000 bp); Lane 1, E. faecalis (positive control); Lane 2, E. coli (negative control). Arrow indicates vanA gene (732 bp).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