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Distribution and strengths of class 1 integron gene cassette promoter variants in *Salmonella Choleraesuis* and *Typhimurium* isolated from Taiwan

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Integrans are the natural gene capture and insertion system through site-specific recombination, which being an important role in the bacterial dissemination of antibiotic resistances. Within these classes of integrans, class 1 integrans are broad and related with the dispersion of antibiotic resistance among Gram-negative bacteria. Gene cassettes of class 1 integrans could be expressed differently depending on Pc variants and seldom from P₂. To study the distribution and prevalence of the gene cassette promoter variants, a total of 169 *S. Choleraesuis* and 191 *S. Typhimurium* isolates collected from human and animals was analyzed. We found that the occurrence of integron was 95.27 % among *S. Choleraesuis*, and 83.25 % among *S. Typhimurium*. Four Pc-P₂ combinational types (PcS+P₂, PcW_{TGN-10}+P₂, PcH1+P₂, and PcW_{TGN-10}+P₂-GGG) were identified within integron-positive isolates through PCR-RFLP experiment. In addition, using transcriptional fusion constructs to measure the strengths of promoter variants was done by β-galactosidase assay. The data indicated that a TGN-10 motif in Pc and a three-guanine insertion (GGG) harbored between -35 and -10 region of P₂ could improve the promoter strength of gene cassette. Although the mechanism of gene incorporation in integron is well-known, not many studies have discussed the regulation of cassette promoters, especially under antibiotic stress. The promoters of integrase and gene cassette are overlapped and could be turned on by the opposite directions. Therefore, studying how these two promoters response to antibiotic stress might clarify the molecular mechanisms of gene regulation in integrans.

Keywords: class 1 integron, gene cassette promoter variants, and promoter regulation