

RESEARCH REPORT - No. 1606 FY 2016-2017

Title of research project	Bacitracin-resistant enterococci in livestock (meats samples) and the multiple-drug resistant pheromone-responsive highly conjugative plasmids in Japan
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【Abstract】

In our previous study, we showed the dissemination of the multiple-drug resistant pheromone-responsive plasmids among vancomycin-resistant *E. faecalis* isolates from livestock and human in Taiwan. The highly-conjugative plasmids encoded the VanA-type vancomycin-resistance, erythromycin-resistance (*ermB*), and bacitracin-resistance (*bcrRABC*).

In the present study, to evaluate the risk of usage of antibiotics for livestock, especially the risk of bacitracin which is a major growth promoter, we examined the domestic and foreign meat samples, and isolated the bacitracin-resistance (*bcr*-positive) enterococci. Totally 482 meat samples were collected and examined during two years (110 domestic and 76 foreign chicken samples in 2016, 110 domestic and 88 foreign chicken, 58 domestic pork, 40 domestic beef samples in 2017). In 2016, *bcr*-positive enterococci were isolated from 88 chicken samples (44 were domestic and 44 were foreign) (47%). In 2017, *bcr*-positive enterococci were isolated from 121 (64 were domestic and 57 were foreign) chicken (61%), one pork (1.7%), and no beef (0%) samples, respectively. Most of the *bcr*-positive enterococci showed the MIC values of bacitracin higher than 32 units/ml. About 70% of the *bcr*-positive enterococci were *E. faecalis*. Of 303 *bcr*-positive bacitracin-resistant *E. faecalis* isolates, 83 bacitracin-resistances (27%) were repeatedly transferred by liquid mating, and frequently co-transferred with other drug resistances such as erythromycin-, tetracycline-, and aminoglycosides-resistances. These results showed the high incidence of bacitracin-resistant enterococci in livestock and the dissemination of multiple-drug resistant pheromone-responsive plasmids.