

Prevalence and antimicrobial resistance of coagulase-negative staphylococci isolated from bovine mastitic milk samples in Korea

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Introduction: Bovine mastitis still remains the most costly disease in dairy industry with losses in milk production and alteration in its quality. Coagulase-negative staphylococci (CNS) are the most common bovine mastitis causing bacteria in many countries. Moreover, resistance to various antimicrobials is more common in CNS than in *Staphylococcus aureus*. Therefore, the objective of this study was to determine the prevalence and antimicrobial resistance of mastitis-causing CNS isolated from dairy cow milk samples.

Materials and Methods: From January 2013 to June 2017, a total of 3,050 nationwide milk samples were collected from 103 dairy cattle farms. Milk samples with somatic cell counts (SCC) of greater than 200,000 cell/ml were examined for the presence of mastitic pathogens. Primary culture of milk samples was performed as described by the National Mastitis Council (NMC, 1999), and isolates were identified by the VITEK MS system (BioMerieux). Antimicrobial susceptibility testing was performed according to Clinical Laboratory Standards Institute guidelines using a Sensititre plate (CMV1AMAF, Trek, UK).

Results: A total of 320 CNS isolates were recovered from milk samples obtained from expected subclinical cases of mastitis cows. Among the identified CNS, the most predominant bacterial isolates were *Staphylococcus chromogenes* 113 (35.3%), followed by *S. simulans* 64 (20.0%), *S. epidermidis* 60 (18.8%), *S. xylosum* 23 (7.2%) and *S. haemolyticus* 19 (5.9%). In particular, high frequency of resistance to antimicrobials, including penicillin (14.5%), tetracycline (10.0%), ampicillin (9.3%) and pirlimycin (6.9%) observed in CNS isolates. A total of eleven methicillin resistant CNS was observed; six *Staphylococcus chromogenes*, two *S. simulans* and one *S. epidermidis*, *S. sciuri* and *S. equorum* each.

Conclusions: These results show prevalence and trends of resistance of CNS isolates originated from bovine mastitis. This information can help select appropriate drug agents for empirical therapy of bovine mastitis infection and also may be helpful to set the guidelines on prevention and control of this pathogen in milk production system.

References

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Seroprevalence of H1N1, H1N2, and H3N2 influenza viruses in Korean swine farms from 2014-2016

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Introduction: Swine influenza is an acute, febrile respiratory disease of pigs with high morbidity and low mortality. The etiologic agent of swine influenza is swine influenza virus (SIV), belonging to the family Orthomyxoviridae. H1N1, H1N2, and H3N2 subtypes are predominantly known in swine population. In this study, we surveyed the seroprevalence of SIV in Korean swine farms with different age groups from 2014 to 2016.

Materials and Methods: From 2014 to 2016, a total of 948 pig sera were collected. Serum antibodies against each of the three SIV subtypes were detected by the hemagglutination inhibition (HI) tests. HI tests were performed with 4 hemagglutination units (HAU) of the virus and 1% chicken red blood cells. Samples with an HI titer of ≥ 20 were considered to be positive.

Results: The percentage of seropositive pigs and herds (farms) were 27.9% and 71.7% respectively. The seroprevalence rate to each subtype in pigs were 17.0% (H1N1), 10.2% (H1N2), and 10.4% (H3N2). The proportion of simultaneous presence of antibodies to two or three different subtypes was 27.3%. By age, the sow group was not only the most seropositive but also had the highest rate of mixed antibodies.

Conclusions: Considering the very limited use of swine influenza virus vaccine in the Korean pig industry, this seroprevalence data might indicate an infection status. In this study, it was found that SIV of H1N1, H1N2, and H3N2 subtypes are enzootic in swine populations in Korea. Also, multiple infections are common, especially in sows. This shows that multiple swine influenza virus subtype was circulating in Korean pig farms. Therefore, the use of swine influenza virus vaccine is recommended in Korea.

References

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Analysis of pesticides in dead bees in Korea in 2016

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