Identification and Antimicrobial Susceptibility of *Streptococcus suis* Isolated from Pig Tonsil Swabs

Sasiprapa Takam1; Chamaiporn Pansumdang1; Sompreeya Kongkaew1; Terdsak Yano1; Panuwat Yamsakul1; Kanruethai Wongsawan1; Prapas Patchanee2

1. Food Animal Clinic, Faculty of Veterinary, Chiangmai University, Chiang Mai, Thailand
2. Veterinary Biosciences and Veterinary Public Health, Faculty of Veterinary, Chiangmai University
3. Veterinary Public Health Centre for Asia Pacific (VPHCAP), Faculty of Veterinary Chiangmai University

* Corresponding author, saengfai@chiangmai.ac.th

**Introduction:** *Streptococcus suis* has emerged as an important pathogen in swine production and has been recovered from nasal cavity, tonsil and reproductive tract in healthy pigs. It would cause a wide range of diseases including meningitis, septicemia, endocarditis, arthritis and pneumonia in pigs. Thirty-five serotypes of *S. suis* have been presently described according to its polysaccharide capsular antigens. *S. suis* serotype 2 is the most frequent associated with clinical disease in pigs and humans. β-lactams (Penicillin, Ampicillin) antibiotics has been widely used for treatment in clinical pigs. However, penicillin resistant beta lactamase negative isolates have been detected. The detection of *S. suis* from healthy pigs will provide epidemiological data and drug resistant pattern of *S. suis* in farming pigs.

**Materials and methods:** Tonsil swab from healthy sows, nursery and finishing pigs in 21 farms in Chiang Mai and Lumphun province, Thailand during August to October 2009 were examined. A total of 507 samples were cultured on blood agar supplement with streptococcal selective media (Oxoid) and further samples were cultured on blood agar supplement with tobramycin (Oxoid). Fifty-four samples from 54 isolates were randomly selected to identify by multiplex PCR using *S. suis* species-specific primers and *S. suis* cps gene primer to be *S. suis* and *S. suis* serotype 2. *S. suis* P1/7 reference strains were used as positive control. The antimicrobial susceptibility of all strains from 54 isolates was determined by agar disc diffusion method.

**Results:** Eighty-five samples (16.8%; n=507) are confirmed as *S. suis*. They were divided into 3 categories: sows 34 samples (95%CI=17.0-31.2), nursery pigs 34 samples (95%CI=8.8-18.6), finishing pigs 25 samples (95%CI=9.0-19.4). Then, Forty-six of *S. suis* isolates were randomly selected to confirm by multiplex PCR using *S. suis* species-specific primers and *S. suis* cps gene primer to be *S. suis* and *S. suis* serotype 2. *S. suis* P1/7 reference strains were used as positive control. Most of *S. suis* isolates were susceptible to ceftriaxone (74.0%) followed by levofloxacin (70.4%) and amoxicillin (61.2%) respectively. The prevalence of tetracycline (94.4%), gentamicin (92.6%) and trimethoprim/sulfamethoxazole (81.5%) resistance were also found in *S. suis* tested. The pattern of antimicrobial resistance of *S. suis* isolates were 22 patterns. The majority of multidrug resistant pattern is 4 drugs including SXT-TE-CN-DA (%37.03) were determined.

**Discussion:** This is the first study investigating *S. suis* in domestic pigs at Chiang Mai and Lumphun province. It was found that *S. suis* can be detected from tonsil swab samples from healthy pigs in all age range. According to the previous study, it has been suggested that tonsils would have been a better site than the others for carrier pig detection. This study has been reported the proportion of *S. suis* collecting from healthy pigs reduced susceptibility to penicillin G. The present information can be useful for monitoring and giving suggestion of using proper antimicrobial towards the infected pigs in this area and be preliminary reference in regard of choosing the antimicrobial drug for treatment purpose. Differentiation of genotypic and phenotypic characterization of *S. suis* from swine and human should be further studied and described.

**References**

7. Lun et al., 2007. The Lancet Infectious Diseases. 7(3) : 201-9.