

are commonly associated with neonatal diarrhea and dysentery in calves. It is important to determine minimal inhibitory concentrations (MICs) for the treatment of animals including human with *E. coli* infections. A total of 160 strains from 158 diarrheic cattle (1 day to 11 years old) were examined between April 1999 and December 2001 in Japan. The isolates were tested about characteristic pathogenic genes (*stx*<sub>1</sub>, *stx*<sub>2</sub>, and *eaeA*) by polymerase chain reaction. Pathogenic *E. coli* were tested *in vitro* for their susceptibility against 18 antimicrobial agents [ampicillin (ABPC), amoxicillin (AMPC), penicillin G (PCG), gentamycin (GM), kanamycin (KM), erythromycin (EM), tetracycline (TC), oxytetracycline (OTC), chloramphenicol (CP), bicozamycin (BCM), fosfomycin (FOM), sulfadimethoxine (SMT), oxolinic acid (OXA), nalidixic acid (NA), enrofloxacin (EFLX), norfloxacin (NFLX), colistin (CL) and trimethoprim-sulfamethoxazole (TMP-S)] using the guidelines of the Clinical and Laboratory Standards Institute (CLSI). The results showed that the *E. coli* strains at MIC<sub>90</sub> were susceptible to EFLX and GM but were resistant to EM, TC, OTC, CP, PCG, AMPC, ABPC and KM. In the case of PCG, the first peak is at the 16–32 µg/ml level which is already considered a resistant value but another peak was demonstrated at a much higher MIC (>512 µg/ml). The results suggested that *E. coli* may be still continued to develop stronger resistance.

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#### Prevalence of Avian Influenza Virus Subtype H5N1 in Waterfowl in West Java Province of Indonesia

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The source of avian influenza virus (AIV) subtype H5N1 transmission in poultry and human continuous to be unclear. This research aimed to isolate AIV, primarily subtype H5N1, from backyard waterfowls (ducks, muscovy ducks, geese) in West Java. Cloacal swab sample was obtained from healthy and unvaccinated backyard waterfowls from the districts of Sukabumi and Bogor. Cloacal swab was propagated in nine day old specific pathogen free (SPF) embryonated chicken eggs. Allantoic fluid was harvested at the 4th day of incubation and then tested for hemagglutination activity. Positive allantoic fluid was further tested for the present of AIV subtype H5N1 using Reverse Transcriptase-Polymerase Chain Reaction with standard primer pairs. Of the total 460 samples, 21 were positive VAI H5N1 (4.57%). Another 13 were HxN1 (2.83%), 3 were H5Nx (0.65%) and 8 were HxNx (1.74%) subtypes. Of the total number (21 isolate) of AIV subtype H5N1 isolated from backyard waterfowls in West Java, 17 isolate (6.49%) from Bogor Regency and 4 isolate (2.02%) from Sukabumi Regency. The prevalence for each species are 6.67%, 4.85% and 4.04% for goose, duck and muscovy duck respectively. In Bogor regency, prevalence for goose

was 8.57%, duck 6.49% and muscovy duck 5.48%. In Sukabumi regency, prevalence for goose was 4.00%, muscovy duck 3.33% and duck 1.40%. This finding indicate that backyard waterfowls seem to play an important role as the source of AI of H5N1 subtype transmission to terrestrial poultry and human.

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#### Mechanism of Antimicrobial Resistance in *Escherichia coli* and *Salmonella* from Food Animals in Thailand

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It has been shown that antimicrobial resistance can be commonly found in foodborne bacteria. Spreading of resistance genes via mobile genetic elements such as integrons may be an important mechanism. Our study was designed to investigate the presence of integrons and resistance gene cassettes, and determine the relationship between gene cassette and antimicrobial resistance in *E. coli* and *Salmonella* isolated from chickens and pigs in Thailand. Resistance to ceftiofur, chloramphenicol, enrofloxacin, erythromycin, gentamicin, oxacillin, trimethoprim-sulfamethoxazole and tetracycline were determined using disk diffusion technique. Detection of class I integrase genes (*intl1*), 3' conserved regions and other resistance gene cassettes was conducted using polymerase chain reaction and confirmed with nucleotide sequencing and restriction endonuclease analysis (REA).

Of the 292 *E. coli* isolates, 95% were resistant to more than one antimicrobial agent. The proportion of *E. coli* with resistance to erythromycin, oxacillin, sulfa-trimethoprim, and tetracycline were 89%, 83%, 72% and 65%, respectively. The *intl1* gene was found in 35% of the *E. coli*. Of these *E. coli* with *intl1* gene, 38% had variable region size ranging from 600–2,000 bp. Of the 196 *Salmonella* isolates, 100% were resistant to more than one agent. The proportion of *Salmonella* with resistance to oxacillin, erythromycin, tetracycline and trimethoprim-sulfamethoxazole were 100%, 99%, 89% and 80%, respectively. The *intl1* gene was found in 95% of the *Salmonella* tested. Common resistance gene were found in isolates from various sources.

Preliminary result indicated that integrons with resistance gene cassettes were shared among *E. coli* and *Salmonella* isolated from various sources of food animals in Thailand. The possible mechanisms of resistance occurrence and transmission among these bacteria, require further investigation.

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