

Deteksi Gen Virulen *Inv A* dan Pola Resistensi Antibiotika *Salmonella* Hasil Isolasi dari Sekum Ayam Pedaging di Rumah Potong Unggas di Provinsi Daerah Istimewa Yogyakarta (DIY)

INTISARI

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Salmonella merupakan bakteri yang dapat mengontaminasi daging ayam potong dan menyebabkan salmonellosis pada manusia. Salmonellosis pada manusia dapat ditularkan melalui makanan asal hewan yang terkontaminasi oleh *Salmonella*. Kehadiran strain *Salmonella* resisten terhadap antibiotika pada produk hewan memiliki peran yang penting bagi kesehatan masyarakat. Penggunaan antibiotik yang tidak rasional dan tidak terkendali merupakan sebab utama penyebaran resistensi antibiotik secara global, sehingga terjadi bakteri yang multiresisten terhadap sekelompok antibiotik. Tujuan dari penelitian ini adalah mengisolasi, mengidentifikasi, serta mendeteksi gen virulen *Inv A*, mengetahui pola resistensi terhadap berbagai antibiotik maupun gen resistensi *Salmonella* pada sekum ayam pedaging. Sebanyak 135 sekum ayam dari RPU Provinsi DIY digunakan untuk penelitian ini. Isolasi dan identifikasi *Salmonella* dengan metode OIE (2018) dan SNI 2897: 2008. Pengujian resistensi antibiotika dengan metode dilusi agar cair secara otomatis menggunakan *sensi titre*. Deteksi gen resisten dan gen virulen *Inv A* dilakukan dengan metode *real time* PCR multiplex. Hasil isolasi dan identifikasi sebanyak 15 isolat (11,1%) adalah *Salmonella sp.* dan 5 isolat (3,7%) *Salmonella enteritidis*. Seluruh isolat *Salmonella* (100%) terdeteksi gen virulen *Inv A*. Isolat *Salmonella sp.* resisten terhadap *ampicillin* (46,6 %, 7/15), *azithromycin* (20%, 3/15), *cefotaxime* (26,6 %, 4/15), *chloramphenicol* (6,6 %, 1/15), *ciprofloxacin* (80 %, 12/15), *gentamycin* (33,3, 5/15), *nalidixic acid* (93,3 %, 14/15), *tetracyclin* (53,3 %, 8/15), dan *trimetoprim* (20 %, 3/15). Isolat *Salmonella enteritidis* resisten terhadap antibiotika *nalidixic acid* (80%, 4/5), *ampicillin* (40%, 2/5) *tetracyclin* (20 %, 1/5). Dari 9 isolat *Salmonella* resisten *ampicillin* (77.78%, 7/9) terdeteksi gen *bla_{TEM}* dan 11.2% (1/9) terdeteksi gen *bla_{PSE}*, serta 1 isolat resisten *chloramphenicol* namun tidak terdeteksi gen *floR*. Dari penelitian ini dapat disimpulkan bahwa berhasil diisolasi dan diidentifikasi *Salmonella sp* maupun *S. enteritidis* dan semua memiliki gen virulen *Inv A*. Pola resistensi antar isolat berbeda-beda dan terdeteksi gen *bla_{TEM}* maupun *bla_{PSE}* pada isolat *Salmonella* resisten *ampicillin* namun tidak terdeteksi gen *floR* pada isolat *Salmonella* yang resisten *chloramphenicol*.

Kata kunci : gen *Inv A* , gen resisten, resistensi antibiotika, *Salmonella*

Detection of Virulent *Inv A* Genes and Patterns of Antibiotic Resistance of *Salmonella* Isolated from Broiler Cecum in Poultry Slaughterhouses in the Special Province of Yogyakarta (DIY)

ABSTRACT

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Salmonella is a bacteria that can contaminate the poultry broilers which can cause salmonellosis to the humans. Salmonellosis in humans is able to be transmitted through the animal's food contaminated by *Salmonella*. The presence of antibiotic-resistant *Salmonella* strains in animal products has an important public health role. The irrational and uncontrolled usage of antibiotic is the main cause of the antibiotic-resistant spread in globally, until the bacteria is multi-resistant to a group of antibiotics. This study aims to isolate the Province of Special Region of Yogyakarta, detect the *Inv A* virulent gene, discover the nature of the resistance of *Salmonella*, also detect the genes encoding resistance to various antibiotics. 135 broilers cecum from RPU DIY Province were used for this research. Moreover, the isolation and identification method of *Salmonella* sp. is using OIE isolation method (2018) and SNI 2897 : 2008. Antibiotics resistance test is using the agar dilution method to be liquid automatically by using the *sensi titre* tool. Then, the detection of resistant genes and virulent genes was carried out by the *multiplex real time* PCR method. The 135 sample results from the isolation and identification was gained 15 isolates of *Salmonella* sp. (11%) and 5 isolates of *Salmonella enteritidis* (3%). All *Salmonella* isolates (100%) detected the virulent gene *Inv A*. Isolate of *Salmonella* sp. resistant to *ampicillin* (46.6%, 7/15), *azithromycin* (20%, 3/15), *cefotaxime* (26.6%, 4/15), *chloramphenicol* (6.6%, 1/15), *ciprofloxacin* (80%, 12/15), *gentamicin* (33.3, 5/15), *nalidixic acid* (93.3%, 14/15), *tetracycline* (53.3%, 8/15), and *trimethoprim* (20%, 3/15). Furthermore, in this study, the isolates of *Salmonella enteritidis* is resistant to *nalidixic acid* (80%, 4/5), *ampicillin* (40%, 2/5), and *tetracyclin* (20 %, 1/5). Of the 9 *ampicillin*-resistant *Salmonella* isolates (77.78%, 7/9) the *bla_{TEM}* gene was detected and 11.2% (1/9) the *bla_{PSE}* gene was detected, and 1 *chloramphenicol* resistant isolate but no *floR* gene was detected. In the results of the *ampicillin* resistance gene coding test (*bla_{TEM}* and *bla_{PSE}*), it was detected that the *bla_{TEM}* gene in the isolate of 7 *ampicillin* resistant, and the *bla_{PSE}* gene was detected in the isolate of 1 *ampicillin* resistant. *Chloramphenicol* resistance coding gene (*floR*) was not detected in the isolate of *Chloramphenicol* resistant.

Keyword: *Inv A* gene, resistant gene, antibiotic-resistance, *Salmonella*

