ABSTRAK

POLA DISTRIBUSI *Enterobacteriaceae* PENGHASIL ESBL (*EXTENDED SPECTRUM β-LACTAMASE*) PADA BAKTERI FLORA USUS SAPI PERAH DAN PENDUDUK SEKITARNYA DI AREA RURAL DI KABUPATEN PASURUAN

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Hewan ternak diduga merupakan faktor risiko zoonosis terhadap kejadian *Enterobacteriaceae* penghasil ESBL. Penelitian bertujuan menganalisis pola distribusi dan faktor risiko *Enterobacteriaceae* penghasil *extended spectrum β-lactamase* (ESBL) pada bakteri flora usus sapi perah dan penduduk sekitarnya. Sampel berjumlah 204 (102 kluster), terdiri dari 102 swab feses sapi perah dan 102 swab feses peternak, diambil menggunakan media transport Amies. Swab feses distreak pada media selektif MacConkey yang ditambahkan cefotaxime 2 mg/L. Konfirmasi penghasil ESBL dengan metode *modified double disk test* (M-DDST). Identifikasi *Enterobacteriaceae* penghasil ESBL dengan uji biokimia. Konfirmasi genotip dengan metode PCR (*polymerase chain reaction*). **Hasil** : Prevalensi bakteri penghasil ESBL di sapi perah 13.7% dan peternak 34.3%. Distribusi *Enterobacteriaceae* penghasil ESBL di sapi perah 50% dan peternak 97.1%. Distribusi bakteri *Enterobacteriaceae* penghasil ESBL pada sapi perah : *Escherichia coli* (85.7%) dan *Enterobacter spp* (14.3%) sedang pada peternak : *Escherichia coli* (82.4%), *Enterobacter spp* (8.8%), *Klebsiella pneumoniae* (5.9%), dan *Klebsiella oxytoca* (2.9%). Distribusi genotip *Enterobacteriaceae* penghasil ESBL pada sapi perah : $bla_{\text{CTX-M}}$ (85.7%) dan *unidentified gene* (14.3%) sedang pada peternak : $bla_{\text{CTX-M}}$ (76.5%), bla_{SHV} (8.8%), dan bla_{TEM} (44.1%). **Kesimpulan** : Distribusi *Enterobacteriaceae* penghasil ESBL pada peternak (97.1%) lebih besar dibanding pada sapi perah (50%). Tidak ada perbedaan signifikan antara distribusi jenis bakteri *Enterobacteriaceae* penghasil ESBL pada sapi perah dan peternak tetapi terdapat perbedaan signifikan antara distribusi bla_{TEM} pada sapi perah dan pada peternak (p = 0,035). Ditemukan kombinasi $bla_{\text{CTX-M}}$ dan bla_{TEM} (23.5%), dan kombinasi $bla_{\text{CTX-M}}$, bla_{SHV}, bla_{TEM} (2.9%) pada peternak. Penggunaan antibiotik diidentifikasi sebagai faktor risiko kolonisasi bakteri penghasil ESBL pada peternak.

Kata kunci : *Enterobacteriaceae*, ESBL, flora usus, sapi perah, penduduk sekitarnya, peternak, rural

ABSTRACT

DISTRIBUTION PATTERN OF ESBL (*EXTENDED SPECTRUM β-LACTAMASE)* PRODUCING *Enterobacteriaceae* IN GUT FLORA BACTERIAL OF DAIRY COWS AND PEOPLE SURROUNDING IN RURAL AREA IN PASURUAN DISTRICTS

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Livestock suspected as zoonotic risk factor of ESBL producing *Enterobacteriaceae*. The aim of the study is to analyzed the distribution patterns and risk factor of ESBL (extended spectrum β-lactamase) producing *Enterobacteriaceae* in gut flora bacterial of dairy cows and people surrounding in rural area in Pasuruan district. 204 collected samples of 102 cluster : 102 fecal swab of dairy cows and 102 fecal swab of farmer. Fecal swab taken using Amies transport medium. Fecal swab streaked on MacConkey agar supplemented with 2 mg/L cefotaxime. Confirmation of the ESBL production used Modified Double Disk Test (M-DDST) and identification used biochemical test. Polymerase Chain Reaction (PCR) method used to identify the genotype of ESBL producing *Enterobacteriaceae*. **Results** : Prevalence of ESBL producing bacteria were found 13.7% in dairy cows and 34.3% in farmers. ESBL producing *Enterobacteriaceae* in dairy cows found of 50% and in farmers of 97.1%. *Escherichia coli* (85.7%) and *Enterobacter spp* (14.3%) was identified in dairy cows while *Escherichia coli* (82.4%), *Enterobacter spp* (14.3%), *Klebsiella pneumoniae* (5.9%), dan *Klebsiella oxytoca* (2.9%) identified in farmers. Distribution of ESBL producing *Enterobacteriaceae* genotype in dairy cows : $bla_{\text{CTX-M}}$ (85.7%) and *unidentified gene* (14.3%) while in farmer : $bla_{\text{CTX-M}}$ (76.5%), bla_{SHV} (8.8%), bla_{TEM} (44.1%). **Conclusion**: Distribution of ESBL producing *Enterobacteriaceae* in farmer (97.1%) was greater than in dairy cows (50%). There are no significant differences of ESBL producing *Enterobacteriaceae* strain distribution in dairy cows and in farmers. There is significant difference of bla_{TEM} distribution in dairy cows and farmer (p = 0,035). Combination of $bla_{\text{CTX-M}}$ dan bla_{TEM} (23.5%), and kombinasi $bla_{\text{CTX-M}}$, bla_{SHV}, bla_{TEM} (2.9%) were found in farmers. Use of antibiotic was identified as risk factor for colonization of ESBL producing bacteria in farmers.

Keywords : *Enterobacteriaceae*, ESBL, gut flora, dairy cow, people surrounding, farmer, rural.