Antimicrobial Resistance in *Escherichia coli* Isolated from Pigs and Pork in Thailand-Laos Border province

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**Introduction**

Antimicrobial resistance (AMR) is a complex global public health problem in both humans and animals. This problem has effect on health and economic system world wild (5). In Thailand, the AMR situation also has critical condition. The AMR prevalence in Thailand has been increasing over the past decade (2,4). The surveillance and monitoring programs for this issue is very important. The world organization suggested using indicator bacteria isolated from healthy animals to represent the AMR situation. *E. coli* is one of the most commonly commensal bacteria in gastrointestinal tract in both humans and animals. They can develop antimicrobial resistance as a response to selective pressures, and transfer resistance genes to another bacterium. Consequently, they were selected to be an indicator bacterium(1).

**Materials and Methods**

The samples were collected by rectal and carcass swab at slaughterhouse and pork swab at retail markets from healthy pigs located in Thailand and Laos border areas (Figure 1). *E. coli* was isolated from the samples and tested antimicrobial susceptibility by agar dilution method followed CLSI, 2013 with eight drugs (Ampicillin, AMP; Chloramphenicol, CHL; Ciprofloxacin, CIP; Gentamycin, GEN; Streptomycin, STR; Sulfamethoxazole, SUL; Tetracycline, TET; Trimethoprim, TRM). Furthermore, all isolates were detected class 1 integron gene by PCR base technique. Extended spectrum beta-lactamase (ESBL) was detected in phenotypic and genotypic method. Moreover, disc diffusion method was used to detect phenotypic of ESBL and PCR base technique was used to detect ESBL genes(3).

**Results and Discussion**

Percentage of Antimicrobial Resistance in *E. Coli* isolates in Thailand-Laos border region

**Figure 3** Percentage of antimicrobial resistance in *E. coli* isolates in Thailand-Laos border region
The results from figure 3 showed that multidrug resistance (MDR) is common in both areas. Moreover, class 1 integrase gene in E. coli is also common in both areas. While class 1 integron gene cassette in both areas is rare detected. Furthermore, the percentage of extended beta lactamase producing E. coli in term of phenotypic and genotypic is low. However, the surveillance and monitoring AMR situation is very importance in worldwide.

**References**


**Acknowledgements**

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**Table 1** The percentage of class 1 integron gene and ESBL genes.

<table>
<thead>
<tr>
<th></th>
<th>Int gene</th>
<th>Class 1 integron gene cassette</th>
<th>bla TEM</th>
<th>bla CTX-M1</th>
<th>bla CTX-M4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thai</strong></td>
<td>175 (47)</td>
<td>28 (8)</td>
<td>6 (2)</td>
<td>6 (2)</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td><strong>Laos</strong></td>
<td>167 (44)</td>
<td>9 (2)</td>
<td>10 (3)</td>
<td>6 (2)</td>
<td>4 (1)</td>
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