SHORT COMMUNICATION

Detection of *Salmonella* sp. and *Escherichia coli* on Chicken Meat at Tamiang Layang Market

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Salmonella* sp. and *Escherichia coli* (E. coli) are the two most important pathogens because they are indicators of food safety and sanitation indicators, because they can potentially pose a high risk of foodborne disease. This study aims to look at the prevalence of *Salmonella* sp. and *E. coli* in the Tamiang Layang Market as a supervision of food safety. A total of 6 chicken breast samples were taken at all chicken traders in the Tamiang Layang market. Testing the presence of Salmonella sp. and *E. coli* using MC-Media Pad. The existence of *Salmonella* sp. and *E. coli* in chicken meat at the Tamiang Layang market were 66.6% and 83.3%. The need to improve hygiene and sanitation for chicken traders.

Key words: chicken meat, *Escherichia coli*, market, *Salmonella* sp.

Tamiang Layang Traditional Market is the main market that provides chicken meat every day for the people of East Barito. At the Tamiang Layang traditional market, there are eight stalls selling chicken meat. Chicken meat can be contaminated in the slaughterhouse, at the point of sale, and during storage.
processing with incomplete cooking.

The possibility of *Salmonella* sp. and *E. coli* in chicken meat during the sales process at the Traditional Tamiang Layang market, it is necessary to conduct research to detect the presence or absence of *Salmonella* sp. bacterial contamination and *E. coli* in chicken sold in the Tamiang Layang traditional market. Information about the contamination of these two bacteria in chicken meat products sold at the Tamiang Layang traditional market will be able to increase the awareness of the Tamiang Layang community in particular and East Barito in general in buying and consuming chicken meat sold in traditional markets in East Barito.

A total of 6 chicken meat samples were obtained from chicken traders at the Tamiang Layang market, East Barito. The samples taken were put into a sterile plastic and stored in a cooler box containing an ice pack and immediately taken to the laboratory for bacteriological testing.

**Isolation and Presence of *Escherichia coli***. A total of 50 grams of chicken thigh meat was weighed then added with 450 mL of Phosphate Buffered Saline (FBS), after which it was homogenized using a stomacher. Prepare the MC-Media Pad *Escherichia coli* test kit by opening the aluminum cap, then opening the transparent pad cover and then dropping 1 mL of a mixture of chicken meat with homogeneous FBS earlier. Insert it slowly diagonally, then close it again. Mc-Media Pad *Salmonella* sp. put into a petri dish, given a code, then incubated at 35 ± 1 °C for 24 ± 2 hours. The colony and the existence of *Salmonella* sp. will appear as a light blue colony (Millipore 2017).

**Isolation of the presence of *Salmonella* sp.** A total of 10 grams of thigh meat samples were weighed then mixed with 90 mL of Phosphate Buffered Saline (FBS) solution, after which it was homogenized with a stomacher. Prepare the MC-Media Pad *Salmonella* test kit by opening the aluminum cover, then opening the transparent pad cover and then dropping 1 mL of the chicken meat mixture with homogeneous FBS earlier. Insert it slowly diagonally, then close it again. Mc-Media Pad *Salmonella* sp. put into a petri dish, given a code, then incubated at 35 ± 1 °C for 24 ± 2 hours. The colony and the existence of *Salmonella* sp. will appear as a light blue colony (Millipore 2017).

Based on bacteriological analysis in the laboratory to determine the presence of *Salmonella* and *E. coli* from chicken meat obtained from the Tamiang Layang market, 6 samples were examined with the following results in Table 1.

Table 1 Presence of *Salmonella* sp. and *Escherichia coli* in chicken

<table>
<thead>
<tr>
<th>Sample</th>
<th><em>Salmonella</em> sp.</th>
<th><em>Escherichia coli</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sample 2</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Sample 3</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sample 4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sample 5</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sample 6</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 2 Prevalence of *Salmonella* sp. and *Escherichia coli* in chicken

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Prevalence (%) (n=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salmonella</em> sp.</td>
<td>4 (66.6) 2 (33.4)</td>
</tr>
<tr>
<td>*Escherichia coli</td>
<td>5 (83.3) 1 (16.7)</td>
</tr>
</tbody>
</table>

Table 1 shows that the presence of *Salmonella* sp. and *E. coli* were positive in 4 samples, i.e. sample (1,3,5,6), whereas in sample 2 it was negative *Salmonella* sp. and positive in *E. coli* and in sample 4 negative for both. *Salmonella* sp. and *E. coli* are food pathogenic bacteria that are transmitted by fecal or oral. The presence of these bacteria in food products of animal origin is caused by many factors of livestock/animal origin, the process of slaughtering, the process of transportation of the product to the market/retail, as well as handling at the sales location (Nel *et al.*, 2004; Regalado-Pineda *et al.*, 2020). Based on studies conducted on the wet market environment and small-scale processing plants in Perlis and Penang, Malaysia, *Salmonella* sp. not only in meat but also found in utensils and equipment used in processing, washing containers, soaking containers, tables, drains and floors around wet markets and processing plants. This suggests that this source is a potential risk for transmission of *Salmonella* sp. on chicken meat and its...
environment (Nidaulah et al. 2017). Poor sanitation and hygiene conditions and high humidity in the slaughterhouse and chicken meat processing industry are ideal for biofilm formation by Salmonella sp. Bacteria. These biofilms are long-lasting and tend to protect Salmonella sp. from cleaners, so it is very risky to cross-contaminate Salmonella sp. in chicken and chicken meat shops (Smith et al. 2007).

Based on Table 2, the prevalence of Salmonella sp. 4 (66%) and E. coli 5 (83,35). The prevalence of E. coli is higher than that of Salmonella sp. high prevalence E. coli in chicken meat shows the low application of sanitation and personal hygiene in producing chicken meat at the Tamiyang Layang Market. Salmonella sp. and E. coli are indicators of food safety and sanitation indicators on the food of animal origin. Meat is one of the main sources of contamination from Salmonella sp. and E. coli, therefore the importance of controlling and surveillance of the presence of these pathogens in food of animal origin (Hedican et al. 2007; Kirk et al. 2015).

The condition of the Tamiyang Layang market, which is located in an open stall for sales of chicken meat, is carried out on the sale site until the carcass is ready for sale without refrigeration resulting in cross-contamination of the presence of Salmonella sp. and E. coli. Sales of chicken meat in open markets without refrigeration have a chance to be contaminated by Salmonella sp. and E. coli. Sales of chicken meat in open markets without refrigeration have a chance to be contaminated by Salmonella sp. and E. coli. In addition, the presence of Salmonella sp. and E. coli are also reported to be found in several processed chicken meat such as grilled chicken, chicken sausage and shredded chicken in chicken porridge (Amiruddin et al. 2017; Kartika et al. 2014; Zelpina et al. 2018).

Poor sanitary conditions in the market for sales in tropical countries also have the potential for high risk of contamination by Salmonella sp. and E. coli which can cause foodborne disease and is a zoonotic disease for the community. The presence of Salmonella sp. and Escherichia coli in chicken meat, not only showed poor sanitary conditions during slaughter but also showed the health status of poultry as carrier carriers against Salmonella sp. and Escherichia coli.

The presence of Salmonella sp. and Escherichia coli in chicken meat sold at the Tamiyang Layang Market, stated that the implementation of sanitary and personal hygiene in every stage of the chicken meat production process has the potential to cause disease in the community because it is a foodborne disease.

REFERENCES


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