Isolation of bacteria from birds in Baghdad

Maysoon S. Abbas
Zoonotic Disease Research Unit, College of Veterinary Medicine, University of Baghdad, Iraq.
maysoon.s.abbas@gmail.com

Abstract
This study carried out on isolation of bacteria from birds. A total of (100) samples of Rectal swabs from birds were randomly collected from Baghdad city (25) swap from pet birds, (70) swap from pigeon, (5) swap from chicken from Baghdad city. The result revealed that isolation rate was (63%) for Staphylococcus aureus,(66%) for Streptococcus group D, (49%) for Escherichia coli, (6%) for E. coliO157, (11%) for Salmonella sp.,(18%) for Shigella,(14%) for Vibrio sp., (10%)for Aeromonas sp., (8%) for Plesimonas shigelloides, (30%) for Klebsiella sp., (2%)for Nocardia sp.

Keywords: Pathogenic bacteria, Isolation, Pet birds, Baghdad.

Introduction
Birds serving as sources of food and are vulnerable to pathogenic infection. Birds spread disease by contamination of food and water sources by diseased individuals (Gregory et al., 2003; Cook et al., 2003; Rappole et al., 2006)

Wild birds acquire Salmonellae and Escherichia coli spread these microorganism directly or by contamination (Reed et al., 2003; Samadpour et al., 2002). Birds spreading salmonellosis, campylobacteriosis, mycobacteriosis, These bacteria cause disease in domestic animals including poultry (Reed et al., 2003) salmonellosis is a cause of sporadic mortality particularly young birds and song birds, wild birds (Daoust et al., 2007) Vibrio sp. Including V. cholerae and V. parahaemolytica isolated from waterfowl (Cai et al., 2001). Isolation of Shigella sp. (birds and rodents) cause zoonotic infection (Wong, 2010) animals including migrating birds transport of V. cholerae.,(Edwards et al., 2010; Nair et al., 2007; Dobbs et al., 2013). Salmonella, Shigella and Proteus, multidrug-resistant enteric bacteria a isolated from different types of birds (Fillion et al., 2015)

Materials and Methods
Collection of samples: A total of 100 rectal swabs were collected from (100) birds (25) pet bird (sparrow), (70) pigeon, (5) from chicken free ranged Samples of birds were randomly collected from Baghdad city, samples transported to the Laboratory within hours and kept in the refrigerator at (4°C) cultures to bacteria were done within (2-4hrs) of samples collection. All swabs were then inoculated on blood agar, MacConkey agar, salmonella shigelgara agar, manitol salt agar, kanamycin agar, Thiosulfate citrate bile salts sucrose agar, and eosin methylene blue agar, chrom agar. Suspected pathogens were further identified by growth characters morphology of colony, direct macroscopic examination, motility test, and different biochemical tests (Quinn et al., 2006).

Results and Discussion
The result revealed that isolation rate was (63%) for Staphylococcus aureus, (66%) for Streptococcus group D, (49%) for Escherichia coli, (6%) for E. coli O157, (11%) for Salmonella sp.,(18%) for Shigella, (14%) for Vibrio sp., (10%)for Aeromonas sp., (8%) for Plesimonas shigelloides, (30%) for Klebsiella sp., (2%)for Nocardia sp. (Table 1).

In this study different Bacteria of human importance were isolated the infected bird shed the agent,for prolonged period and the shedding of a pathogen is more obvious in younger birds than in adult as in Salmonellosis. ((Aly et al., 2015) E. coli, Salmonellae isolated in the rate of 48 % and 10.75% wild birds as true reservoirs in transmission of E. coli and salmonellae. The bacteria isolated from different sp. of birds were Salmonella sp. (46.67%), E. coli (64.44%), Staphylococcus sp. (46.67%), Proteus sp. (6.67%) (Pasteurella sp. (33.33%) (Nnachi et al., 2015).
Bacteria isolated from 72 samples collected from water birds in Bangladesh. Isolation rate of *Staphylococcus* sp. 27.78%, *E. coli* was 54.16 %. *Salmonella* sp. 31.94%. *Proteus* sp. *Bacillus* sp. 26.38 % 8.33%. Among the isolates, *E. coli* was found to be more prevalent bacteria. (Vezzulli et al., 2010). Fresh feces from 343 migratory aquatic birds, were collected in Chiba and Ibaragi Prefectures, Japan, from 103 (30.0%) of the 343 samples. Among those positive samples, *Vibrio cholerae* (15.7%), *V. parahaemolyticus* (8.5%).

*Salmonella* species were isolated from captive passerine or psittacine birds, was reported in different cases (Kullas et al., 2002). Wild and migratory birds spread bacterial diseases that affect public health through migration routes. (Wani et al., 2004). Birds and animals feces may contain pathogens that are infectious for different species of animals, plants, humans. The main types of pathogens in collecting and processing of organic wastes and feces, and hygienic risks due to sludge and related products. (Sonntag et al., 2005).

Wild birds play an important role in the dissemination of pathogenic organisms, *Mycobacterium avium*, *Chlamydia psittaci*, *Campylobacter jejuni*, *Borrelia burgdorferi*, *Salmonella* sp., *Escherichia coli*, (O157-H7) (Eijdokun et al., 2006; Jubirt et al., 2015; Wong, 2010; Praveen et al., 2014; Gowda et al., 2015). *Salmonella* genus colonize the digestive tract of birds. *Salmonellosis* causes gastroenteritis in humans and animal, being the most important reported zoonotic disease bacterial food-borne disease in industrialized countries (Ahmed et al., 2011; Akhter et al., 2010). *Salmonella* spp and *E. coli* of human isolated from migrating birds are important in transmission pathogens by migrating birds and the handling of birds by workers (Sarker et al., 2012). *Staphylococcus aureus* is the bacteria involved in food poisoning causing gastroenteritis from ingestion of enterotoxins in contaminated food (Roppole et al., 2003). *Escherichia coli* is the most common foodborne zoonotic pathogen causing various disease in both animals and humans (Tsiodras et al., 2008). *E. coli* O157 isolated from faeces of garden bird in southwest Scotland, this indicate that both birds and people is a priority during ringing exercises and during garden-bird feeding (Martens et al., 2003; Reed et al., 2003). Faeces of Rook *Corvus frugilegus* were the source of *E. coli* O157 infection in humans which handled. (32) *Campylobacter* sp., *Vibrio* sp., *Salmonella* isolated in 105 of 338 (31%) fecal sample, (101) *Klebsiella* species isolated from duck cloaca from Igoli (Huba’lek, 2004; Humair, 2002). *E. coli* O157, that causes enterohaemorrhagic infections in humans and have been recovered from wild birds (Eijdokun et al., 2006; Hilbert et al., 2012). *Aeromonas hydrophila* ubiquitous in freshwater and infects fish, humans, reptiles, and birds (Tizard, 2014) isolation of *Shigella* sp. from birds can be vectors for *Shigella* sp. and cause zoonotic infection (Ves et al., 2003). *Aeromonas* sp. have an pathogen, isolates from chicken, including *Aeromonas hydrophila*, *Aeromonas sobria*, *Aeromonas caviae*(Kumar et al., 2014; Foster et al., 2006). From 226 fecal sample, intestinal content, rectal swab, and heart blood were collected from animals and birds, all the samples were tested for isolation of *E. coli*. Out of all the samples 138 (61.06%) were found to be positive for *E. coli* (Neher et al., 2016).

Table (1): Isolation rate and percentage of bacteria from birds in Baghdad

<table>
<thead>
<tr>
<th>Type of bacteria</th>
<th>Total no.</th>
<th>No of positive in chicken(5)</th>
<th>No of positive in Pet bird(25)</th>
<th>No of positive in pigeon(70)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>63</td>
<td>5</td>
<td>15</td>
<td>43</td>
</tr>
<tr>
<td><em>Streptococcus group D.</em></td>
<td>66</td>
<td>4</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>49</td>
<td>4</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td><em>Klebsiella sp.</em></td>
<td>30</td>
<td>3</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td><em>Shigella</em></td>
<td>18</td>
<td>2</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td><em>Salmonella sp.</em></td>
<td>11</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Aeromonas sp.</em></td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td><em>Vibrio sp.</em></td>
<td>14</td>
<td>1</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td><em>Nocardia sp.</em></td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><em>E coli O157</em></td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><em>Plesimonas shigelloides</em></td>
<td>8</td>
<td>-</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

References


Akhter, M.T.; Hossain, M.T.; Siddique, M.P. and


