BRIEF COMMUNICATION

THERMOTOLERANT Campylobacter SPECIES ISOLATED FROM PSITTACIFORMES IN THE PERUVIAN AMAZON REGION

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KEYWORDS: Campylobacter; Reservoirs; Psittaciformes; Parrots.

In the last years, the thermotolerant campylobacters (C. jejuni subsp. jejuni, C. coli and C. lari) have acquired a great importance in public health, specially as agents of human diarrheal disease

These zoonotic bacteria are carried in the intestinal tract of a wide variety of wild and domestic animals and, as result of fecal contact during processing, frequently contaminate foods derived from animals. There is evidence to indicate that poultry and, to a lesser extent, pets (especially kittens and puppies) are important reservoirs of Campylobacter and principal vehicles of campylobacteriosis.

Frequently, in Iquitos (eastern Peru), parrots (Psittaciformes) captured from the jungle, are bred by families as pets, especially in the peri-urban zones. Since the sources from which humans acquire the campylobacteriosis, are only partially known, in this study, we determined the frequency of carriage of thermotolerant campylobacters in wild Psittaciformes.

Fecal samples were obtained by cloacal swabs from 142 wild parrots in different peri-urban zones of Iquitos city (in the Peruvian Amazon region, Southern latitude 3°45'). The animals were caught in the jungle, sampled and then released.

All samples were immediately transported and enriched in the transport and enrichment medium proposed by FERNANDEZ, consisting of (wt/vol): Brucella broth (Difco) 2.8 g%; agar - agar (Difco) 0.15 g%; ferrous sulphate (Merck) 0.05 g%; sodium metabisulfite (Merck) 0.05 g%; sodium pyruvate (Merck) 0.05 g%; trimethoprim (Sigma) 1 mg%; rifampicin (Sigma) 1.5 mg%; colistin (Sigma) 1000 IU%; amphotericin (Squibb) 1 mg% and defibrinated horse blood 3 ml%. After that, they were streaked onto modified SKIRROW plates consisting of (wt/vol): Brucella agar (Difco) 4.3 g%; ferrous sulphate (Merck) 0.05 g%; sodium metabisulfite (Merck) 0.05 g%; sodium pyruvate (Merck) 0.05 g%; vancomycin (Sigma) 1 mg%; trimethoprim (Sigma) 0.5 mg%; polimixin B 250 IU%; cephalothin 1 mg%; amphotericin (Squibb) 0.1 mg% and defibrinated horse blood 5 ml%. The plates were incubated at 42°C for 48 h in an atmosphere of 5% O₂ - 10% CO₂ and 85% N₂.

Suspected colonies were identified morphologically (Gram stain) and biochemical characterization of the isolates was done using the differential tests proposed by LIOR and GOOSSENS & BUTZLER: catalase and oxidase tests, growth conditions, susceptibility to nalidixic acid (30μg), hippurate hydrolysis, rapid H₂S production and DNA hydrolysis.

The results obtained show that 10/142 (7.0%) of the wild parrots studied yielded thermotolerant campylobacters (Table 1). This value is lower than that reported by MAGGI et al. in Chile (8.3%) who determined the prevalence of Campylobacter in caretakers and animals from the Santiago zoo.

On the other hand, this isolation rate is slightly lower than that reported by TRESIERRA-AYALA et al. in domestic parrots from this peruvian region (8.0%); however, our results suggest that these birds may be important reservoirs of campylobacters.

These bacteria were not isolated from Aratinga weddellii, Amazona amazonica and Ara manilata.

C. jejuni subsp. jejuni was the most frequent of isolated species; in contrast, C. lari was not isolated from these birds. Only biovars I and II of C. jejuni subsp. jejuni and C. coli were found.

C. jejuni subsp. jejuni biovar I was isolated from all the species of parrots under study but not in Aratinga weddellii, Amazona amazonica and Ara manilata, being the most prevalent biovar in these birds.

LUECHTEFELD et al. and KAPPERUD & ROSEF were some of the first investigators to document the isolation of these organisms from wild birds. LUECHTEFELD et al. reported an isolation rate of Campylobacter spp. from approximately one-third of the migratory birds from which they took samples.

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Table 1
Distribution of the biovars of *C. jejuni* subsp. *jejuni* and *C. coli*, isolated from wild parrots studied

<table>
<thead>
<tr>
<th>Parrot Name</th>
<th>n</th>
<th><em>C. jejuni</em> subsp. <em>jejuni</em></th>
<th></th>
<th></th>
<th><em>C. coli</em></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I</td>
<td>II</td>
<td></td>
<td>I</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td><em>Pionites melanocephala</em></td>
<td>25</td>
<td>1 (4.0)</td>
<td>1 (4.0)</td>
<td>0 (0.0)</td>
<td>1 (4.0)</td>
<td>3 (12.0)</td>
<td></td>
</tr>
<tr>
<td><em>Brotogeris versicolorus</em></td>
<td>17</td>
<td>1 (5.9)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (5.9)</td>
<td>2 (11.8)</td>
<td></td>
</tr>
<tr>
<td><em>Ara ararauna</em></td>
<td>10</td>
<td>1 (10.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (10.0)</td>
<td></td>
</tr>
<tr>
<td><em>Brotogeris cyanoptera</em></td>
<td>33</td>
<td>2 (6.1)</td>
<td>0 (0.0)</td>
<td>1 (3.0)</td>
<td>0 (0.0)</td>
<td>3 (9.1)</td>
<td></td>
</tr>
<tr>
<td><em>Ara macao</em></td>
<td>13</td>
<td>1 (7.7)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (7.7)</td>
<td></td>
</tr>
<tr>
<td><em>Aratinga weddellii</em></td>
<td>24</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td><em>Amazona amazonica</em></td>
<td>12</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td><em>Ara manilata</em></td>
<td>8</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>142</td>
<td>6 (4.2)</td>
<td>1 (0.7)</td>
<td>1 (0.7)</td>
<td>2 (1.4)</td>
<td>10 (7.0)</td>
<td></td>
</tr>
</tbody>
</table>

( ): %

Kapperud & Rosef reported high isolation rates of *C. jejuni* from crows, gulls, and domestic pigeons. They concluded that campylobacters are a normal component of the intestinal flora in several bird species. At the other side of the spectrum, Hill and Grimes documented the absence of *C. jejuni* from waterfowl on Lake Onalaska, Wis. They suggested that the distribution of the organism among migratory waterfowl was sporadic. It is probably that the relative high body temperature of birds may favor the growth of thermotolerant campylobacters and due to their great mobility, wild birds can live near man and may function as effective sources of contamination, through fecal excrements, of pastures, forage and surface waters.

The epidemiology of the campylobacteriosis is still not completely understood. At present, we do not know the extent to which human infections are derived from animals, so, it would be important to do more studies for clarifying the epidemiology of human campylobacteriosis that seems to be a very complex problem in the peruvian jungle.

**RESUMO**

Espécies de *Campylobacter* termotolerantes isoladas de Psittaciformes silvestres na região amazônica do Peru.

Foi determinada a frequência de isolamento de campylobacters termotolerantes em Psittaciformes silvestres capturados na região amazônica do Peru. Campylobacters foram isolados em 10/142 (7.0%) dos animais estudados, sendo *C. jejuni* subsp. *jejuni* biovar I (6/10) e mais frequente, seguido de *C. coli* biovar II (2/10), *C. lari* não foi isolado. Os resultados sugerem que estas aves podem ser importantes reservatórios destas bactérias.

**REFERENCES**


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