ISOLATION OF Pasteurella multocida FROM WILD RACCOONS AND FOXES: PRELIMINARY REPORT 1

Authors: BONDS, R. E., McCUNE, E. L., and OLSON, L. D.

Source: Journal of Wildlife Diseases, 8(3) : 296-299

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-8.3.296

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne’s Terms of Use, available at www.bioone.org/terms-o-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.
ISOLATION OF Pasteurella multocida FROM WILD RACCOONS AND FOXES: PRELIMINARY REPORT

R. E. BOND, E. L. McCUNE, and L. D. OLSON.

Abstract: Pasteurella multocida was isolated from the tonsillar fossa of five of twelve wild raccoons (Procyon lotor) and one of two red foxes (Vulpes vulpes) which were collected with humane wire-cage traps near turkey farms. In one raccoon, the organism was recovered from the mouth in addition to the tonsillar fossa. The fermentation pattern of these isolates was the same as that for 84% of the 214 isolates of P. multocida recovered from turkeys in Missouri veterinary medical diagnostic laboratories during the last 5 years. Although these isolates were pathogenic for turkeys, the organism was not transmitted from raccoons to turkeys.

INTRODUCTION

Pasteurella multocida can survive as a saprophyte in the respiratory system of many wild and domestic animals. Its existence in a carrier animal has caused infections in man through animal bites and scratches.

In reviewing our diagnostic laboratory case reports of turkey cholera, it was noted that wild raccoons (Procyon lotor) and red foxes (Vulpes vulpes) are frequent predators of turkeys on range. Since predator attacks often precede outbreaks of fowl cholera in turkeys by 7-10 days, there exists the possibility that these predators may be carriers or a reservoir for P. multocida.

The purpose of this study was first, to determine if wild raccoons and foxes could carry P. multocida and second, to determine the site for isolating this organism from live predators.

MATERIALS AND METHODS

Isolation of P. multocida: All raccoons and foxes were captured with humane wire-cage traps on or near turkey farms and brought to the Veterinary Diagnostic Laboratory, University of Missouri for study and evaluation. The raccoons were physically restrained for collecting swab samples, whereas the foxes were tranquilized due to their size and viciousness.

The buccal cavity including the teeth, the pharynx, and the tonsillar fossae were swabbed and the swabs streaked on dextrose-starch agar (DSA)*. After incubation for 18 hours at 37 C, the growth was examined for P. multocida using a stereomicroscope with an oblique source of light. The mouths of most animals were swabbed at least three times.

Biochemic Tests of P. multocida: Suspected isolates of P. multocida were tested for their fermentative reactions and gas production in eight carbohydrates and for motility, hydrogen sulfide production and indole production in SIM medium*.

Fermentation reactions were determined in dextrose, lactose, sucrose, maltose, arabinose, dulcitol, xylose and...
TABLE 1. Incidence of *Pasteurella multocida* in tonsillar crypts of wild raccoons and foxes.

<table>
<thead>
<tr>
<th>Animal Species</th>
<th>No. Positive/No. Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raccoon (<em>Procyon lotor</em>)</td>
<td>5/12</td>
</tr>
<tr>
<td>Red Fox (<em>Vulpes vulpes</em>)</td>
<td>1/2</td>
</tr>
</tbody>
</table>
DISCUSSION

The fermentation patterns of the raccoon and fox isolates were comparable with the results of a study by Donahue who found that 83.6% of 214 turkey isolates from Missouri could be placed in Dorsey's group II. From results of this study, it is suggested that the *P. multocida* isolated from the raccoons and fox were the same as that causing fowl cholera in turkeys.

Since only one death occurred and all groups of turkeys were clinically ill for a period of 7 days after inoculation, the isolates used in this study were probably of low virulence and similar to the isolates from naturally diseased turkey flocks in Missouri.

It was found that *P. multocida* could be isolated consistently from the tonsillar fossae with little contamination. Swabs taken of other areas of the oral cavity were frequently contaminated with a *Proteus* swarmer that made impossible the identification of any *P. multocida* present.

Bergerud has reported the transmission of *P. multocida* by predation of lynx on caribou calves. Therefore, the theory that the transmission of *P. multocida* in turkeys on range may be caused by the predation of wild carnivores was not rejected, even though attempts to demonstrate the phenomenon in this study were unsuccessful.
TABLE 2. Bacteriological characteristics of isolates of Pasteurella multocida from raccoons and foxes.

<table>
<thead>
<tr>
<th>Culture No.</th>
<th>Source</th>
<th>Date</th>
<th>Racoon 6-2-71</th>
<th>Racoon 6-15-71</th>
<th>Racoon 6-24-71</th>
<th>Racoon 6-29-71</th>
<th>Racoon 8-2-71</th>
<th>Red Fox 9-7-71</th>
</tr>
</thead>
<tbody>
<tr>
<td>2876</td>
<td>Raccoon</td>
<td>6-2-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>2940</td>
<td>Raccoon</td>
<td>6-15-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>4001</td>
<td>Raccoon</td>
<td>6-24-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>4015</td>
<td>Raccoon</td>
<td>6-29-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>4179</td>
<td>Raccoon</td>
<td>8-2-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>4384</td>
<td>Red Fox</td>
<td>9-7-71</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Type: Colony

Iridescent: +
Intermediate: +
Blue: +

A* = acid produced; — = negative observation; + = positive observation.

LITERATURE CITED


Received for publication March 20, 1972