OCCURRENCE OF *Salmonella New Brunswick* IN DEAD CHICK EMBRYOS

Gihei Sato, Takeo Miyamae, Shiro Miura and Kazuhiko Suzuki

Laboratory of Epizootiology, Faculty of Veterinary Medicine, Hokkaido University, Sapporo, Japan

Riichi Sakazaki

Government Experimental Station for Animal Hygiene, Tokyo, Japan

(Received for Publication, April 26, 1955)

*Salmonella* infection of hatching eggs or baby chicks seems to be an important cause of the losses in hatcheries. In this country, several types of *Salmonella*, such as *S. bareilly*, *S. thompson* and *S. senftenberg* besides *S. gallinarum-pullorum*, have been isolated from dead chick embryos in hatcheries by Hamada, Ono et al. and Watanabe et al. Recently, Hamada et al. reported the first isolation of *S. new brunswick* from some apparently healthy baby chicks in Japan and Kato detected the same organism from heart blood of 2 hens. Furthermore, many strains of *S. new brunswick* originating from animals in America are confined largely to poultry as pointed out by Hamada et al. From the above mentioned facts, *S. new brunswick* seems to have an intimate connection with poultry. However, *S. new brunswick* has not yet been isolated from dead chick embryos in Japan and in other countries.

The present workers isolated 122 cultures of *Salmonella* in the course of a bacteriological survey in dead chick embryos collected from 16 representative hatcheries in Hokkaido. Among these 122 cultures, 64 cultures derived from 13 hatcheries were identified as *S. gallinarum-pullorum*, 37 cultures from 7 hatcheries as *S. senftenberg*, 7 cultures from 3 hatcheries as *S. thompson*, 12 cultures from 2 hatcheries as *S. new brunswick* and 2 cultures from 1 hatchery as *S. bareilly*. As is indicated in the table, no *Salmonella* strain other than 9 strains of *S. new brunswick* was found in 285 dead chick embryos in total from K hatchery up to the end of March. From the other F hatchery, 3 strains of *S. gallinarum-pullorum* and 3 of *S. new brunswick* were obtained in the same period.

In 1953, Hamada pointed out “it is noticeable that the *Salmonella* types other than *S. gallinarum-pullorum* are more frequently discovered in dead baby chicks compared with those in dead-in-shell-chicks”.

The present experimental results seem to suggest that *S. new brunswick* is
SATO, G. et al.

TABLE. Occurrence of Salmonella at K and F Hatcheries

<table>
<thead>
<tr>
<th>HATCHERY NAME</th>
<th>DATE</th>
<th>SALMONELLA</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>new brunswick</td>
<td>gallinarum-pullorum</td>
<td>other</td>
</tr>
<tr>
<td>K</td>
<td>8/III</td>
<td>4/99 (4.0%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>15/III</td>
<td>5/68 (7.4%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>26/III</td>
<td>0/118</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>F</td>
<td>8/III</td>
<td>0/156</td>
<td>1/156 (0.6%)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>12/III</td>
<td>3/123 (2.4%)</td>
<td>2/123 (1.6%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Numerator indicates number of dead chick embryos from which Salmonella organism was isolated and denominator the number of embryos examined.

possibly responsible for the occurrence of dead-in-shell-chick like other Salmonella types such as S. senftenberg, S. thompson and S. bareilly that were recently detected in dead chick embryos besides S. gallinarum-pullorum by several Japanese workers. Moreover, it is a noteworthy fact that S. new brunswick, in some instances, was the exclusive or a prominent invader so far as Salmonella organism was concerned.

This work has been supported in part by a Grant in Aid for Co-operative Research from the Ministry of Education, for which the authors express their gratitude. The authors are also indebted to Prof. HAMADA for his kind advice.

REFERENCES