

# アヒルにおけるMoraxella(Pasteurella)anatipestifer感染症 の発生

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## An Outbreak of *Moraxella (Pasteurella) anatipestifer* Infection in Ducklings in Japan

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Diseases manifesting a neurologic signs began to prevail from June, 1978 at a commercial duck farm in Osaka prefecture of Japan. From 15 days after hatching, ducklings fell into depression accompanied with dacryorrhea, nasal discharge and greenish diarrhea. These signs grew severest at 20-30 days of age, and some animals exhibited leg paralysis and eventually died. Some others were relieved of these signs from approximately 35 days of age but developed circulating movement with torticollis. Since 40 days of age, growth retardation became noticeable in some ducklings.

*Pasteurella anatipestifer* infection (new duck disease, duck septicemia, infectious serositis) [2, 3] was suspected from the age of the onset and clinical signs in these cases. Then bacterial examination was performed for the diagnosis.

Fifteen ducklings with abnormal clinical signs such as leg weakness, locomotor incoordination, torticollis and neck torsion were sacrificed for bacterial isolation from the brain, spinal cord, liver, spleen, pericardium and blood. Isolation of bacteria from the tissues was performed using 10% horse serum added torytosoy agar medium (Nissui Pharmaceutical Co., Ltd., Tokyo). Inoculated agar plates were incubated at 37°C for 48 hr in 5% CO<sub>2</sub> incubator. Gram negative, small rods bacilli were isolated in pure culture from most of the tissues examined.

The isolates were examined for susceptibility to 14 antibiotics and 4 sulfonamide by the disc method using Showa-disc (Showa Yakuhin-Kako Co., Ltd., Tokyo). The bacteria were highly susceptible to penicillin, aminobenzylpenicillin, ampicillin, cephaloridine, cephalosin, tetracycline, erythromycin, lincomycin, spiramycin, streptomycin, kanamycin, gentamicin, polymyxin-B, and chloramphenicol, but were not or lower sensitive to sulfisoxazol, sulfamonomethoxin and sulfadimethoxin.

The bacteria were examined for their biochemical properties; such as various enzyme production, utilization of nitrogen or carbon source, and other properties. Carbohydrate fermentation were determined using CTA medium (Nissui Pharmaceutical Co., Ltd.) and BCP-semisolid agar base (Eiken Chemical Co., Ltd.). The characteristics of the isolates are shown in Table 1 in comparison with those reported by other investigators. From these characteristics, they were classified to *Moraxella (Pasteurella) anatipestifer*.

Fourteen-day-old ducklings in groups of 8 were inoculated intravenously (IV) or into the foot pad (FP) with 10<sup>7</sup> cells of isolated bacteria, or intratracheally (IT) with 2×10<sup>7</sup> cells. They were maintained on drug-free feed. Some birds of the IV-challenge group developed leg weakness and died from 2 days after the challenge. During the 15-day course of observation, 4 ducks of this group died. All of the remaining 4 ducks survived but developed leg weakness. Leg weakness also occurred in all 8 ducks of the FT-challenge group, of which 4 died within 6 days. In the IT-challenge group, 5 ducks developed mild leg weakness, and 2 of them died during the 24-day period of observation. In these experiments, the bacteria were recovered from all ducklings that died or developed leg weakness.

On the other hand, when 18-day-old chicks of the White Leghorn Hy-Line strain were injected IV with 10<sup>7</sup> cells of the isolate, mild leg weakness occurred in only 1 chick. All other chicks stayed asymptomatic, and the bacteria were not recovered from them.

The isolate disclosed properties identical to the bacterial isolate described by Heddleston [2] and Bendheim *et al.* [1] as *Pasteurella anatipestifer*. However, in the Bergey's Manual of Systematic Bacteriology [4], the isolate used does not belong to either genus *Pasteurella* or genus *Moraxella*, as judged from the nonfermentative nature and other characteristics and is thus taxonomically unclassifiable. In this paper, therefore, it was

Table 1. Characteristics of the bacterial isolates from a ducking

Test	Moraxella anatipestifer		
	Present isolate	Heddleston (1975)	Bendheim (1978)
Cell form	R <sup>a</sup> , s.f. <sup>b</sup> )	R, s.f.	R, s.f.
Gram-staining	-	-	-
Bipolar-staining	+	+	-
Motility	-	-	-
Growth on MacConkey's	-	-	-
Gelatin hydrolysis	+	+	+
Oxydase test	+	-	+
Catalase test	+	-	+
Serum coagulation	+	-	+
Milk coagulation	-	-	-
Nitrate reduced to nitrite	-	-	-
Citrate utilization	-	-	-
Indole production	-	-	-
H <sub>2</sub> S production	-	-	-
Urease test	-	V	-
MR test	-	-	-
Haemolysis	-	-	-
Acid production from:			
Arabinose	-	-	-
Dulcitol	-	-	-
Fructose	-	-	-
Galactose	-	-	-
Glucose	-	-	-
Glycerol	-	-	-
Inositol	-	-	-
Inulin	-	-	-
Lactose	-	-	-
Maltose	-	-	-
Mannitol	-	-	-
Mannose	-	-	-
Raffinose	-	-	-
Salicin	-	-	-
Sorbitol	-	-	-
Sucrose	-	-	-
Trehalose	-	-	-
Xylose	-	-	-

a) Rod.

b) Short filament.

described as *Moraxella (Pasteurella)*.

*Moraxella (Pasteurella) anatipestifer* infection in duck and isolation of this bacterium have never been reported in Japan. This paper is the first to describe *Moraxella (Pasteurella) anatipestifer* infection and its bacterial isolation in Japan.

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#### 要 約

アヒルにおける *Moraxella (Pasteurella) anatipestifer* 感染症の発生 (短報): 馬場 威・小田切美晴<sup>1)</sup>・森本 委利<sup>1)</sup>・堀本知昭・山本祥二 (大阪府立大学農学部家畜微生物学教室, <sup>1)</sup>家畜病理学教室) ——1978年6月以降, 大阪府下の1養鷺場の21~40日齢アヒルにおいて, 脚弱, 頸部捻転などの神経症状を伴う疾患が多発し, 脳, 脊髓, 肝臓, 脾臓, 心嚢および血液から *Moraxella (Pasteurella) anatipestifer* が純粋に分離された。分離菌を接種されたアヒルは野外発生例同様の症状を示し, 菌が回収された。