NOTE

Isolation of Fowl Adenovirus from Tendons and Tendon Sheaths of Chickens with Leg Weakness

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Tenosynovitis or viral arthritis of chickens is generally considered to be caused by strains of avian reovirus [6]. However, in the recent studies, Mackenzie and Bains [5], and Kibenge *et al.* [4] in Australia and Jones *et al.* [1, 2] in England reported the isolation of fowl adenovirus (FAV) from leg materials of affected birds.

The authors have also isolated three strains of FAV, in 1981, from leg materials (tendons and tendon sheaths) of broiler chickens with clinical evidence of leg weakness in two flocks shown in Table 1. This paper may be the first report of the isolation of FAV from leg materials of chickens with leg weakness in Japan.

The methods of virus isolation were as follows: Tissues removed from chickens, which showed leg weakness, were macerated to give a 20% suspension in nutrient broth containing antibiotics. Suspensions were centrifuged at 3,000 rpm for 10 minutes, and the supernatant was inoculated into rolling tubes of preformed primary chicken kidney cell monolayers. The cultures were examined daily for cytopathic effect (CPE) for 5 days post inoculation, and samples were passaged a minimum of three times before being judged as virus negative. The appear-

ance of CPE was regarded as virus positive. The viruses isolated were purified by the plaque method, then identified by physicochemical and serological investigations.

FAVs were isolated from leg materials of 3 birds and from feces of 8 birds in two flocks as shown in Table 2. The titers of FAV in the virus-positive leg materials were $10^{1.95}$ (Flock A), $10^{1.70}$ and $10^{2.45}$ (Flock B) TCID₅₀/g. In both flocks, FAV was not isolated from the liver, kidney, lung and trachea. Therefore,

Table 1. Clinical condition of broiler chickens in two flocks

Flock	Days of age	Clinical signs	Mortality
A	40	Leg weakness Diarrhea Death	1.0%
B	26	Leg weakness Death	2.4%

Table 2. Isolation of fowl adenovirus from chickens with signs of leg weakness

Tissues	Flock A	Flock B
Tendon and Tendon sheath	1/7*	2/7
Feces	7/8	1/5

* No. of isolates/No. of samples examined.

inclusion body hepatitis was unsuspected in these birds.

Bacteriological examination using the swabs of the tendons was carried out, but significant bacteria were not isolated.

An attempt was made to classify these isolates serologically, employing antiserum to 8 prototype strains of FAV (Ote, KR-5, TR-22, YR-36, SR-48, SR-49, TR-59, and CR-119) reported by Kawamura *et al.* [3]. Eight isolates from the leg materials and feces in flock A were neutralized, specifically, by antiserum to KR-5 strain. On the other hand, 2 strains isolated from leg materials in flock B reacted with antiserum to Ote strain, and the isolate from the feces was neutralized by antiserum to SR-49 strain. These results show that these isolates from leg materials of two flocks can be divided serologically into two groups, KR-5 and Ote prototypes of FAV.

Each of the isolates obtained from leg materials of flock A and B was injected into foot pad of day-old specific pathogen free chickens with $10^{4.5}$ or $10^{5.0}$ TCID₅₀ of the virus per bird, and clinical signs of these birds were observed during 35 days. Swelling of tendon, leg weakness, lameness and any other clinical signs were not found in them.

Jones *et al.* [1] suggested that certain strains of FAV isolated from tenosynovitis may play a role in tenosynovitis from the susceptibility of tendon and tendon

sheath organ cultures to the FAV. Moreover, they [2] also suggested that the isolation of FAV may only represent chance isolation of viremic virus. In the case of flock B, however, 2 isolates belonged to Ote prototype of FAV were recovered from only leg materials but not from the other tissues. Then it may be considered that FAV replicated in the tendon or tendon sheath.

In this study, the isolates of FAV were not able to reproduce clinical tenosynovitis. Jones *et al.* [2] also have reported the difficulty in reproducing the lesions following infection with FAV. Further studies should be carried out on the pathogenicity of FAV in tenosynovitis.

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要 約

脚弱鶏の関節材料からの鶏アデノウイルスの分離(短報): 高瀬公三・丸山智之・野中富士男・山田進二(化学及血清療法研究所)——脚弱を示した26日齢および40日齢のプロイラーひなの関節材料(腱ならびに腱鞘)から3株の鶏アデノウイルスを分離した。分離株はKR-5株およびOte株と同一血清型であったが、1日齢SPFひな趾蹠内接種によって、関節の腫脹あるいは脚弱等は観察されなかった。