

**IMMUNOPROTECTIVITY OF ATTENUATED TURKEY POXVIRUS IN TURKEY POULTS AND BROILER CHICKS.**ODOYA, E.M.<sup>1</sup>; ABEGUNDE, A.<sup>2</sup>; AGYOGBO, B.G.<sup>2</sup>; OMOTAINSE, S.O.<sup>1\*</sup>; OGO, N.I.<sup>2</sup>; OGO, M.F.<sup>2</sup> AND GIDA, P.N<sup>1</sup>Nigerian Institute for Trypanosomiasis Research, Vom Plateau State Nigeria, <sup>2</sup>National Veterinary Research Institute, Vom, Plateau State Nigeria, <sup>3</sup>Department of Veterinary Pathology University of Agriculture Abeokuta, Nigeria, <sup>4</sup>Ministry of Health, Jos, Plateau State Nigeria.

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**ABSTRACT**

In Nigeria, fowl pox vaccine is used in all categories of poultry. However there has been reports of outbreak of turkey pox virus in poults previously vaccinated with fowl pox vaccine.

Pox Lesion from poults was excised for isolation of virus and viral propagation in chorioallantoid membrane. Turkey pox virus were isolated from the infected turkeys and confirmed by infecting susceptible turkeys with the isolate to reproduce the disease. Persistence of both turkey poults and broiler chickens to challenge after vaccination with attenuated turkey poxvirus was confirmed.

**INTRODUCTION**

Avian Pox is prevalent worldwide and birds of all ages sexes and breeds are susceptible to the virus (4). Avian pox is caused by four strains of poxvirus. Turkey poxvirus, Fowl poxvirus, Pigeon poxvirus and Canary poxvirus. Report shows that there is antigenic relationship between the poxviruses of the different avian species and it has been shown experimentally that the virus of one type of avian pox can give rise to disease in another and that infection in one may stimulate protection against another. (2)

However, turkey poxvirus is immunogenically distinct from fowl poxvirus (1). This is collaborated by

report n Vom, Nigeria that turkey poults suffered outbreak of pox after previous vaccination with fowl pox vaccine (4). The disease still remains a common complaint and constraint to growth of turkey industry in Nigeria.

**This work was carried out.**

- i. To isolate turkey pox virus
- ii. To attenuate the isolated virus
- iii. To ascertain the effectiveness of the attenuated turkey poxvirus in the control and prevention of turkey pox disease in turkeys.

## **MATERIALS AND METHODS**

Nodular lesion of turkey pox was excised from five mixed-bred turkey poults of eight weeks old. Excised lesions were weighed and ground with aid of sterile sand. A heat 20% w/v suspension was prepared with P.B.S. centrifuged at 2,500 r.p.m. for 30 minutes. The supernatant was decanted and stored in the deep freezer at  $-20^{\circ}\text{C}$ .

### **REPRODUCING THE DISEASE IN SUSCEPTIBLE TURKEYS**

3.0ml concentrated turkey poxvirus suspension containing  $10^{-3}$  EID<sub>50</sub> was inoculated subcutaneously at multiple points on the head region of 5 (4 months old) Local bred susceptible turkeys.

1.0ml  $10^{-3}$  EID<sub>50</sub> was inoculated subcutaneously on both wing web of 5 (5 weeks old) Local bred turkey poults.

### **PREPARATION OF MASTER SEED**

The master seed was prepared as a 50% solution with stabilizer. (Equal volume of infected membrane with equal volume of stabilizer). This was then dispensed into vaccine vials in 2mls aliquots and stored at  $-20^{\circ}\text{C}$  in the deep freezer.

### **PROTECTION OF BROILER CHICKEN AND TURKEY POULTS WITH TURKEY POX ATTENUATED VIRUS**

7 Broiler Chicks at 6 weeks old and 7 (8 weeks old turkey poults were immunized with 20<sup>th</sup> passage chorioallantoid membrane turkey pox virus. 2 poults and 2 broiler chicks were left unimmunized for control. The method was by subcutaneous inoculation of 0.5ml attenuated suspension containing  $10^{5.6}$  EID<sub>50</sub>. Birds were left for 3 weeks for observation and were later challenged with virulent fowl poxvirus.

## **TEST FOR PROTECTION**

Fowl pox challenge virus was used and the protected broiler chicken above were challenged together with the controls. The combs were scarified. Challenge fowl pox virus was dissolve in 2mls P.B.S. and was applied uniformly on the scarified comb protected turkeys and the control above were challenged by infecting subcutaneously at multiple points with 2mls P.B.S. dissolved fowl pox challenge virus.

## **RESULTS**

### **Reproducing the disease on susceptible turkey**

5 days post infection, multiple nodular lesion were observed on the head and upper neck region of the 4 month old susceptible turkeys. In the five weeks old poults, lesion appeared 4 days post infection.

### **Protection of Broiler chicken and turkey poults with turkey pox attenuated virus**

'Vaccine take' was observed at different points in all birds 3 days post inoculation.

### **Test for protection**

3 weeks after challenge the protected 7 broiler chicken and 7 turkeys showed no reaction to challenge while the control came down with the disease.

## **DISCUSSION**

It is the author's experience in previous fieldwork that fowl pox vaccine could not confer lasting immunity in turkeys but rather may be protective if used in chicken (4).

Cutaneous infection alone ordinarily cause low or moderate mortality and the affected birds generally return to normal upon recovery (1) Nodules though

progressively increase in size with scab formation but terminate with desquamation of the degenerated epithelium.

The result most significantly indicates that attenuated turkey poxvirus could protect strongly both chicken and turkeys from pox infection. Resistance of turkey poults to challenge after vaccination with attenuated turkey poxvirus confirms the immunogenicity of turkey pox antigen in turkeys.

It is recommended that turkey pox vaccine be developed specifically from turkey pox virus in the control and prevention of turkey pox disease. This will boost the growing turkey industry in Nigeria.

## REFERENCES

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