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تأثير العمر على قابلية البط للاصابة بفيروس مرض النيوكاسل والدور  
الذى تلعبه هذه الطيور فى وبائية المرض

صلاح وهية ، أحمد سامى ، سامى صابر ، نرجس برهومة ، شوقى نديم ، سعيد الصبان

- ١ - عند ما تم عدوى البط الحديث صناعيا على أعمار مختلفة من ثلاثة أيام الى ثمانية عشر يوما بفيروس النيوكاسل الحشرى الضارى لم تستجب تلك الطيور للعدوى .
- ٢ - جميع البط الذى أعطى العدوى صناعيا وكذلك الضوابط المخالطة ظل يفرز الفيروس وتم عزله من فتحة المجمع .
- ٣ - الكفايت القابلة للعدوى المخالطة للبط الذى تم عدواه بالفيروس الحشرى الضارى نفقت وتم عزل الفيروس من أحشائها .



THE AGE SUSCEPTIBILITY OF DUCKS "PEKINI TYPE" & THE ROLE THEY  
PLAY IN THE TRANSMISSION OF THE VISCEROTROPIC VELOGENIC NEWCASTLE  
DISEASE VIRUS TO CHICKENS

(With One Table)

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SUMMARY

1. Different ages of ducklings from 3 days old to 18 days old when experimentally given the VVNDV did not respond to the disease.
2. All inoculated ducklings shedded the virus as well as the contact ducklings.
3. The susceptible contact chicks contracted the disease from the inoculated ducklings & died & virus was recovered from their organs.

INTRODUCTION

(1)  
In a previous experiment (Annual Report PLI 480) a trial was made to determine the susceptibility of ducks "Pekini Type" to the viscerotropic velogenic Newcastle disease virus "VVNDV". These ducks were 35 days old. The results of this experiment showed that using different routes of inoculation of these ducks, those inoculated intracerebrally responded to the virus and showed nervous symptoms whereas those inoculated by other routes did not respond to the virus but shed the virus.

In this experiment a trial was made to see the age susceptibility of these ducks & the role they played in the transmission of the disease to domesticated chicks.

Different results were reported by different workers on the susceptibility of ducks & the role they played in the transmission of the disease. PALMER and TRAINER (1971) mentioned that waterfowls in general were refractory to Newcastle disease. Though Newcastle disease antibody had been found in wild waterfowls, ULTERBACK (1973) reported that a native duck found dead in a canal in a quarantined area in Florida, USA, yielded NDV on examination. ESTUDILLO (1972) mentioned that in an aviary containing many species of birds, a severe outbreak of Newcastle disease occurred and was noted that the ducks (Species of Anatid) & geese (Species of Anseriformes) generally withstood the outbreak, however a small number showed paralysis of the legs and wings & some lack of coordination in movement of the neck and that 25% of the ducks exhibited nervous symptoms. AHMED *et al.* (1966) reported that surveys indicated that Newcastle disease had presented no problem in semi mature and adult ducks; however, the disease caused some mortality in ducklings from which the virus had been recovered. AHMED *et al.* (1968) showed that in adult breeder ducks only 33% of the serum pools examined showed low titers of ND antibody. In contrast HIGGINS (1971) mentioned that an acute syndrome of ND was reported in six outbreaks in ducks in Hong Kong and it was noted that the field strain of NDV was highly virulent and therefore he suggested that a more acute clinical picture could occur in the field. WINMILL (1961) reported that a carrier of ND had been detected in adult domestic ducks. DOYLE (1927) reported that experimental contact infection of a chicken by two Newcastle disease infected ducks had occurred. SABBAN *et al.* (1971) in Bangaladish showed that local ducks did not respond to VVNDV but shed the virus in their feces.

MATERIALS & METHODS

Ducklings:

Thirty ducklings "Pekini Type" one day old were purchased from a duck breeding farm near Cairo.

Susceptible chicks:

Susceptible twelve "Nicols" chickens were obtained from the General Poultry Company as one day old & were well

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isolated for 2 months old until their parental immunity was lost. Blood samples, cloacal & tracheal swabs were taken from all birds before inoculation & examined for HI & virus isolation.

#### Virus:

The locally isolated & characterized virus & proved to be viscerotropic velogenic type was used.

### EXPERIMENTAL

The ducklings were divided into six groups of 5 birds each. These groups were inoculated at 3,6,9,12,15 & 18 days old. Each group was kept in a separate cage.

They were inoculated with the VVNDV by the intranasally (0.2 ml) and orally (0.8 ml) routes, giving one million infective doses to each bird. In each group 4 birds were inoculated & one left as contact control. With each group two 6 weeks old chicks were kept as susceptible contacts. Blood samples were taken every week after inoculation until 4 weeks. Cloacal & tracheal swabs were taken every 3 days after inoculation to test for shedding of the virus.

### RESULTS

As shown in Table (1).

Group 1: Were inoculated at 3 days of age, & shedded the virus 21 days after inoculation. The contact chickens put after 14 days post inoculation, showed symptoms (gasping & green diarrhea), shedded the virus after 24 days & 27 days & died after 30 days of duck inoculation. Non of the duckling showed any symptoms & the noninoculated contact duckling contracted the disease as it shedded the virus.

Group 2: Inoculated at 6 days of age, non showed any symptoms, but shedded the virus on the 21<sup>st</sup> day post inoculation in both the inoculated & noninoculated contact duckling. The contact susceptible chickens were put after 11 days & showed typical symptoms, shedded the virus after 18 & 24 days & died after 30 days.

Group 3: Inoculated at 9 days of age, non of the ducklings showed any symptoms, both the inoculated & contact control shedded the virus after 15 days of inoculation. The contact susceptible chickens were put 7 days post inoculation, showed symptoms, & shedded the virus after 18 & 21 days post inoculation of ducks & died after 25 days.

Group 4: Were inoculated at 12 days of age. Did not show any symptoms, but shedded (inoculated & non inoculated) the virus after 12 days post inoculation. The contact chickens were put after 4 days post inoculation showed typical symptoms of the disease, shedded the virus after 12 days post inoculation of ducks & died after 30 days.

Group 5: Were inoculated at 15 days of age, showed no symptoms, but shedded (both inoculated & contact control), the virus after 9 days post inoculation.

The contact chickens were put on the same day of inoculation of ducks & died without showing symptoms after 10 days.

Group 6: Were inoculated at 18 days of age, showed no symptoms, but shedded the virus ( both inoculated & non inoculated ) after 6 days post inoculation.

The contact chickens were put at the same day of inoculation of the ducks, showed typical symptoms of the disease, shedded the virus 6 days post-inoculation of ducks & died after 10 days.

The virus was reisolated from the brains & internal organs of all dead contact chicks. The shedded virus of duckings was inoculated intracloacally in susceptible chicks & proved to be the viscerotropic velogenic type.

### DISCUSSION

Though many workers reported that ducks respond to Newcastle disease (WITTERBACK 1973, ESTADELLO 1973, AHMED *et al.* 1966, 1968 and HIGGINS 1971) and showed nervous symptoms, yet in this trial of different ages of ducklings from 3 days till 18 days, the virus could not produce the disease in duckling of 3 days old. Although the VVNDV

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could not produce any symptoms, yet all the inoculated ages shed the virus, as well as the contact control ducklings. The susceptible contact chicks also contracted the disease from the inoculated ducklings. WINMILL (1961) reported that a carrier of Newcastle disease had been detected in adult domestic ducks and DOYLE (1927) reported that experimental contact infection of a chicken by two Newcastle disease infected ducks had occurred. Other workers (SABBAN 1971) reported that the virus could be detected in feces of artificially exposed ducks and a goose 3 to 4 days following noninfective periods of up to 4 days. The difference in results between different workers and the symptoms of the disease that appeared in outbreaks among ducks, need more investigations.

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TABLE (1)  
The Age Susceptibility & Role played by Ducks "Pekini type"  
in the Transmission of the VVNDV to Chicks

Go No.	Type & Inoc. of Birds With	Symptoms & Lesions	Shedding of Virus	Reisolation
I				
3 D old	4 Inoc. with 1 million per Os & one as contact Control.	None showed any symptom or lesions	Shedded Virus 21 days post inoculation & the contact control	----- -----
	2 chickens as suscept, contacts	Shows typical symptoms 3,4 d post inoc.	Shedded virus after 24 days & died 1-3 d	Virus recovery from internal organs.
Gr. 2 6 D old	4 inoc. with 1 million per Os. & one as cont, control	None showed any sympt or lesions	Shedded Virus 21 days position & the cont. control	----- -----
	2 chickens as suscept cont.	Showed typic sympt & Lesions died on 30 d	Shedded Virus after 18-24 days	Virus Recov. from inter Org.
Gr. 3 9 D old	4 Inoc. with 1 million Per Os & one cont. cont.	None showed any sympt. or lesions	Shedded Virus after 15 days & cont. control	----- -----
	2 chickens as suscept contacts	Showed typical sympt & Lesion & died 25 d.	Shed Virus after 18 & 21 days.	Virus Recove. from int. Org.
Gr. 4 12 D old	Inoc. with 1 million Per Os. & one cont. control.	none showed any sympt or lesions	Shedded Virus after 12 days & contact.	----- -----
	2 chickens as suscept contacts	Showed typi. sympt & lesions & died	Shed Virus after 12 d.	Virus Recov. from Int. Org.
Gr. 5 15 D old	4 Inoc. with 1 mill. per Os. & one cont control	none showed any sympt. Lesions	Shed Virus after 9 days & cont.	-----
	2 chickens as suscept contacts	Showed typi. symptoms & lesions after 10 d.	----- -----	Virus Recov. from int.Orga.
Gr. 6 18 D old	4 Inoc. with 1 mill. Per Os & one cont. control	None showed symptoms or lesions	Shed Virus after 6 days & cont-cont.	----- -----
	2 chicks as suscept contacts	Showed sympt & lesions & died after 10 D.	----- -----	Virus Recov. from Int-Orga.