IMMUNE RESPONSE OF CHICKS TO *INFECTIOUS BURSAL DISEASE VIRUS* BOOSTER VACCINATION.

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Abstract.
Study involving the rate at which chicks respond to repeat vaccination with Infectious Bursal Disease (IBD) vaccine was investigated. Eight groups of chicks aged 10 days were given first dose of IBD vaccination. Three weeks post first vaccination (PV), the vaccination was repeated in four groups while the remaining 4 groups served as controls. Starting from three weeks after the repeat vaccination, sera were collected from a pair of the groups every week for analysis using Qauntitative Agar Gel Precipitation Test (QAGPT) to assess antibody levels. Antibody titre rose to peak 3 weeks post repeat vaccination in the boosted groups. Also, mean antibody titre was higher and lasted longer in the groups boosted than in the groups with single vaccination ($P < 0.05$).
Key words: Chicken, Agar Gel Precipitation ,Antibody levels, IBD, Booster vaccination

Introduction.
Main method for control of IBD is vaccination of susceptible avian species with the IBD vaccine (Ezeibe, *et al* , 2009). However, it has been observed that IBD outbreak among vaccinated flocks is now common due to emergence of mutants of the causative virus (Jackwood *et al*., 2008, Jackwood *et al*., 2011) and due to suboptimal response of chicks to vaccination (Abdu, 2001).
Lin – Yusher *et al* (1997) reported that in China, a combination ot IgG and hyper immune serum is now employed in prevention and managment of IBD. In USA, IBD virus strain 2512 is being combined with bursal disease antibodies to produce IBDV – BDA complex vaccine which has proved effective even in chicks that have maternal antibodies (Aliyu *et al*., 2016).
IBD is reported to cause higher mortality among chicks in the tropics than it causes in temperate countries (Musa *et al*., 2012). So, need exists for researchers in the tropics to also look for new methods to improve immune response of chicks to IBD vaccination. This involves appraissal of factors that effect immune responses of animals to infections or vaccinations.
Viral vaccines provoke production of antibodies (White, 1984) which prevent viral infections , in most cases, by inhibiting viral attatchment to host cells (Victoria, 2010). Such active immune responses are specific (Liao, 2013) and can recognize previously encountered antigens. When animals` immune systems recognize a repeat encounter with an antigen, it initiats vigorous memory immune response specifically against that antigen (Paul, 1989).
Antibody response to first experience with an infection or vaccination is usualy IgM which wanes fast but when there is repeat experience of the same infection or vaccination, the antibody response is more rapid, higher in level and is mainly IgG which lasts longer (Klein, 1990).
The experiment was therefore, designed to study immune response of chicks to repeat (Booster) vaccination with IBD vaccine in a tropical environment as a step towards suggesting more effective methods of vaccination to control the epizootic.

Materials and Methods.
Eighty chicks were used for the study. The chicks were vaccinated with IBD vaccine (National Veterinary Research Institute, Vom, Nigeria) at age of 10 days. They were then divided into 8 groups of 10 chicks each. Three weeks post vaccination, the IBD vaccination was repeated in 4 groups of the chicks. The remaining 4 groups served as controls. One group of chicks with booster IBD vaccination and a control group were bled each week and and their sera used for Qauntitative Agar Gel Precipitation Test (QAGPT)

as described by Herbert (1974) . Means of antibody titres of the groups of chicks given booster dose of IBD vaccine and those left with only the initial vaccination were compared by students T – test.

Results and Discussion.

The groups in which IBD vaccination was boosted had higher antibody response ranging from AGPT 4 – 16 than the control groups which ranged 1 – 2 ($P < 0.05$).Antibody titre of AGPT 8 and above persisted in chicks with booster IBD vaccination up to 8 weeks of live.

Antibody responses of the 8 groups of chicks are as shown on table 1.

Table 1: Effect of booster vaccination on antibody response of chicks to IBD vaccine (AGPT Titre).

Time post vaccination (Wks)	Boosted Group	Control group
1	**8**	**2**
2	**4**	**1**
3	**16**	**1**
4	**8**	**1**
$\bar{X}$	9 ± 2.52	1.5 ± 0.29

Booster vaccination improved IBD immune response ($P < 0.05$).

Report of outbreaks of IBD in vaccinated flocks is now common occurence in Nigeria (Abdu *et al*, 2001). A recent survey of chicks hatched in the country also revealed that they lack maternal immunity against IBD. Low level of IBD antibodies in the parent stock hens is suspected to be responsible for this lack of maternal immunity in chicks. These may explain high incidence of IBD in the country.

Since boosting IBD vaccination improved circulating antibody titre of the chicks from 1.5 ± o.29 to 9 ± 2.52, repeating IBD vaccination will help reduce incidence of IBD in the country. Also, a recent study showed that Nigerian chicks need antibody titre of at least AGPT 8 to protect them from local isolates of the IBD virus. This means that the mean AGPT titre of 1.5 ± 0.29 got in the group with single vaccination may not protect them to IBDV challenge.This may be responsible for outbreaks of IBD in vaccinated flocks which is often reported (Abdu *et al*, 2001).

Another study has also shown that giving Nigerian chicks multivitamine medication for for 3 days before IBD vaccination and for another 3 days after the vaccination, raised the immune level to as high as AGPT 32 and above.

Conclusion and Recommendation

It is therefore recomended that Nigerian farmers revaccinate their flocks with IBDV 3 weeks after first IBD vaccination, give their flocks pre and post vaccination medication with multivitamines and repeat IBD vaccinaton of parent stock hens annually. These measures may reduce incidence of IBD in the country.

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