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# Putative protective antibody response following oral vaccination of multi-age free ranging helmeted guinea fowls (*Numida meleagris*) with Newcastle disease virus strain I-2 coated on oiled rice

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## Abstract

On-farm study was conducted to determine the efficacy of thermostable Newcastle disease (ND) strain I-2 vaccine coated on oiled rice following oral vaccination of multi-age free ranging helmeted guinea fowls. The results from haemagglutination-inhibition assay showed that 7 days after the guinea fowls were orally vaccinated they seroconverted and attained the geometric mean antibody titre (GMT) of 4.9 log<sub>2</sub> (80%). This antibody titre was above the GMT of 3.0 log<sub>2</sub> which is regarded to be protective against field challenge of ND. Furthermore, the results revealed that 28 days after vaccination, the antibody levels reached GMT of 7.6 log<sub>2</sub> (100%). Moreover, all vaccinated guinea fowls survived the challenge of virulent ND virus whereas all unvaccinated chickens died of ND. The findings from the present study showed that the I-2 virus coated on the oiled rice is safe, immunogenic and provoked production of protective antibody response following oral vaccination of helmeted guinea fowls.

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# Putative protective antibody response following oral vaccination of multi-age free ranging helmeted guinea fowls (*Numida meleagris*) with Newcastle disease virus strain I-2 coated on oiled rice

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**Abstract** On-farm study was conducted to determine the efficacy of thermostable Newcastle disease (ND) strain I-2 vaccine coated on oiled rice following oral vaccination of multi-age free ranging helmeted guinea fowls. The results from haemagglutination-inhibition assay showed that 7 days after the guinea fowls were orally vaccinated they seroconverted and attained the geometric mean antibody titre (GMT) of  $4.9 \log_2$  (80%). This antibody titre was above the GMT of  $3.0 \log_2$  which is regarded to be protective against field challenge of ND. Furthermore, the results revealed that 28 days after vaccination, the antibody levels reached GMT of  $7.6 \log_2$  (100%). Moreover, all vaccinated guinea fowls survived the challenge of virulent ND virus whereas all unvaccinated chickens died of ND. The findings from the present study showed that the I-2 virus coated on the oiled rice is safe, immunogenic and provoked production of protective antibody response following oral vaccination of helmeted guinea fowls.

**Keywords** Guinea fowls · Newcastle disease · Oiled rice · Thermostable vaccine

## Abbreviations

EID<sub>50</sub> median embryo infectious dose  
GMT geometric mean titre  
NDV Newcastle disease virus

## Introduction

Guinea fowl (*Numida meleagris*) sometimes called guinea hen has a wide distribution in Africa where it has become popular among smallholder farmers (Microlivestock 1991; Nwagu and Alawa 1995). The attractive plumage, value as a table bird with game-type flavour and high meat to bone ratio has led the guinea fowls to be widely accepted (Baba et al. 2006).

There is general acceptability of guinea fowl and guinea fowl products due to their low production costs, premium quality meat, and greater capacity to scavenge for insects and grains and better ability to protect itself against predators (Microlivestock 1991; Aitken et al. 1977).

Generally, guinea fowls are resistant to many bacterial and viral diseases, but they are susceptible to Newcastle disease (ND). Newcastle disease is a highly contagious, generalised virus disease of domestic poultry and wild birds characterised by gastro-intestinal, respiratory and nervous signs. Natural infections and outbreaks of ND in guinea fowls have been reported in some countries in Africa particularly in West Africa (Echeonwu et al. 1993; Haruna et al. 1993; Okaeme et al. 1988).

The feasible method of controlling ND is through vaccination. ND vaccines have been administered via various routes like drinking water, via feed and injection. But it has been very difficult to vaccinate the free range guinea fowls or even the housed ones using the conventional vaccines. Guinea fowls are very strong fliers hence difficult to catch for individual vaccination. When these birds are frightened during handling, injuries and accidental deaths may occur (Oke et al. 2004). In lieu of the above, new innovative vaccination techniques for guinea fowls are required.

Food-based vaccines have been developed to protect the village chicken against ND (Spradbrow 1992). Food-based

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## About this Article

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