

**TITLE: Parasite control to enhance immune response to Newcastle disease vaccination in village chicken to improve productivity**

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# Introduction

- Free range poultry keeping is commonest and economically important poultry production system for peri-urban and rural farmers in Kenya.
- Poultry population : Approx. 31.8 M poultry,  
-25.7 M are indigenous chicken (Kenya National Bureau of Statistics, 2010)
- Village chicken production is limited by :
  1. Newcastle disease (main one) and IBD
  2. Endo, Ecto and hemo-parasites, predation, theft and low levels of animal health and husbandry

# Newcastle Disease

- Newcastle disease (ND) : Viral disease of poultry and wild birds characterized by variable morbidity and mortality rates, signs and lesions.
- Classification of NDV: Mononegavirales, family Paramyxoviridae and genus Avulavirus.
  - Pathotypes of ND
- Viscerotrophic velogenic (Doyle form)
- Neurotrophic velogenic form (Beach type)
- Mesogenic virus (Beaudette form)
- Lentogenic virus (Hitchner form)
- Asymptomatic enteric form

- Newcastle disease (ND) is a major constraint to production of village chickens in many developing countries (Sprabrow, 1988; Alexander, 2001)
- Success of village chicken production depends on effective control of NDV (Yongolo *et al.*, 1997).
- Vaccination prevents Newcastle disease in poultry (Alders and Spradbrow, 2001).
- Many factors contribute to low ND vaccination antibody level response in poultry (Nyaga *et al.*, 1985) and subsequent immunity.
- Stress has been reported to cause immunosuppression (Njagi *et al.*, 2010a)
- Immunosuppression due to stress may be one major cause of poor vaccination response (Otim *et al.*, 2005; Njagi *et al.*, 2010a).
- Previous Studies have focused on Newcastle disease in commercial birds but very little on domestic indigenous poultry.

## Some Major Causes of Stress in Village Chicken

- Parasites: Ectoparasites, endoparasites and hemoparasites (Sabuni, 2007).
- Infectious agents : Bacteria and viruses ,
- Poor nutrition, and
- Scavenging in search for food (walking long distances)

However, very little has been done to study the effects of stress on effectiveness of Newcastle disease vaccination.

# ● Poultry parasites

- Poultry parasites cause low mortality, stress, & significantly hinder and lower chicken production (Sabuni, 2009)
- Endo and ectoparasites prevalence: 90- 97% ( Maina, 2005; Sabuni, 2009) .
- Endoparasites :
  1. Nematodes (*Heterakis*, *Gongylonema*, *tetrameres*, *Acuaria*, *Ascaridia*, *Capillaria* species)
  2. Cestodes (*Raillietina* spp),
  3. Trematodes
  4. Protozoan species (Maina, 2005).
- Ectoparasites:

Mite, lice, tick and fleas

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