

## 1. INTRODUCTION

Rabbit production has the potential to improve on the diet and income of many poor households. This is due to its high growth and fecundity rate as well as low investment and labor cost (Spore, 2007; Soyebó, 2006). It provides an inexpensive source of white; fine grained, appetizing and tummy to taste meat that can be used to bridge the low consumption rate of meat in developed countries like in Egypt. In addition, the FAO recipe to fight hunger has rabbit as its key component (Prathap and Ponnusaing 2007).

Feed is a major component affecting net return from the livestock enterprise, because 80% of the total expenditure in terms of cash is spent on feed (Farooq *et al.*, 2001). To ensure more net return and to minimize expenditure on feed are the main challenges, for which many research strategies has been practiced such as introducing feed additives (Zeweil *et al.*, 2013; Pervez, 1992).

Rabbits weaned at 4 to 5 weeks of age are faced with a number of stressors, such as separation from their mother, change in the living environment and cessation of milk suckling (Cheeke *et al.*, 1987). Low nutrient intake during the first days after weaning may be one of the major causes for the impaired intestinal function and integrity generally observed after weaning (Spreeuwenberg *et al.*, 2001). In an effort to reduce the impact of some of these early stressors, supplementation of animal feed with antibiotics has been practiced since the 1950s. Supplementation of diets with antibiotics for nursery rabbits remains common practice in many countries to improve growth performance and protect the animal from the adverse effect of pathogenic and non-pathogenic enteric microorganisms. The administration of sub therapeutic antibiotics and antimicrobial agents has been shown to be effective” (Hughes and Heritage 2009). However, overuse and misuse of antimicrobial agents have favored the growth of resistant organisms. This antimicrobial resistance may spread to other microbial populations. Infectious diseases that have become resistant to standard antimicrobial treatment present a threat to human and animal health. The detrimental effects of dietary antibiotics have become obvious and consequently have caused increased public concern. Beginning in January 2006, the European Union and in November 2006, Egypt banned all antibiotics used as growth promoters in animal feed in the European market. Thus, the development of alternatives to the use of dietary antibiotics is required. The concern of course stays in countries where the antibiotics are still in use. Current research is looking for natural alternatives to antibiotics and synthetic feed additives. Recently, many studies have focused on the effects of medicinal herbs in animal nutrition as substitutes of antibiotic growth promoters. The use of herbs may relate to their antimicrobial activity against pathogenic bacteria and parasites (Banerjee, 1998). Medicinal herbs such as garlic (*Allium sativum*), ginger (*Zingiber officinale*) and ginceng have been reported to possess antibacterial, antiseptic, anti-inflammatory, antiparasitic and immunomodulatory properties (Muhammad *et al.*, 2009; Simonová *et al.*, 2008). In addition to these attractive properties, herbs have been shown to increase feed palatability and thus feed intake (Horton *et al.*, 1991). Because of the antimicrobial, antioxidant and flavour enhancing properties of garlic, ginger and ginceng, these herbs may promote growth and feed utilization in monogastric animals such as rabbit.

There has been a little research on the use of ginger, garlic and ginseng as natural feed additives in rabbit nutrition, because of the availability of low costs and proven effective synthetic growth-promoting feed additives.

This work therefore was designed to evaluate the effects of garlic and gingers and their combination and also ginseng on the growth performance, carcass traits, hematological and serum biochemical indices of weaned rabbits.