

## Broilers Serum Cholesterol and Glutamic Oxaloacetic Transaminase and Their Relation to Antibiotic in Feed and Medication Programs in Four Broiler Producers in Semarang Region-Central Java, Indonesia

R. Murwani and B. Bayuardhi

Laboratory of Nutritional Biochemistry, Department of Nutrition and Feed Science,  
Faculty of Animal Science, Diponegoro University Semarang, Central Java, Indonesia

**Abstract:** This study was carried out to investigate the use of antibiotic in feed and medication programs and their effects on broilers Serum Cholesterol and Glutamic Oxaloacetic Transaminase (SGOT). The broilers were sampled randomly from four small-scale broiler producers (BP1, BP2, BP3, BP4) in Semarang region-Central Java, Indonesia. Observed data comprising medication programs and the types of feed ingredients in the commercial complete feed were obtained from medication program brochures and feed labels respectively. Four unsexed broilers from each poultry producer were randomly sampled at selling point in poultry slaughterhouse. Broilers market body weight and abdominal fat percentage were measured on the spot. Blood was taken to obtain the serum samples for determination of serum cholesterol and SGOT. An independent experimental study (E1) was also carried out approximately the same time as the field study using the same feed as in BP-4 and raised under similar condition as in the broiler producers. However, no medication program was employed. The results showed that all feeds from four different feed companies (FC1, FC2, FC3, FC4) used by the four BPs respectively contained antibiotics. Antibiotics were also administered in medication program via drinking water. The market age was found to be 34-35 days old and market weight was in average  $1760.38 \pm 54.14$  g with no significant difference among producers. This market weight had no significant difference to E1. There was no significant difference in broilers abdominal fat percentage and SGOT among BPs. However, these abdominal fat and SGOT were significantly higher than E1. There is a significant difference in serum cholesterol of broilers among BPs, where BP-4 had the highest ( $145.2 \pm 6.59$  mg dl<sup>-1</sup>) and BP-3 had the lowest serum cholesterol level ( $117.53 \pm 9.76$  mg dl<sup>-1</sup>). These serum cholesterol and SGOT levels were significantly higher than those in E1 or in those published results that used in-feed antibiotic and no-medication (E2) or no antibiotic in feed nor medication (E3). These results suggested that antibiotic in feed and medication program affect lipid and hepatic metabolism of broilers which is reflected by an increase in serum cholesterol and SGOT.

**Key words:** Broiler, cholesterol, SGOT, antibiotic, feed, medication

### Introduction

Antibiotics as feed additives have been used since chlortetracycline was found in 1940 (Spring, 1999). Its continued use is due to promotion of growth and feed efficiency. The action of in feed-antibiotic is partly mediated by a decrease in the number of competitive pathogenic bacteria in the gut and hence increases the utilization of nutrients (Cook, 2000; Dibner and Richards, 2005). However, after 50 years of its use, it has created global market pressure for in feed-antibiotics bans due to the possible link between antibiotic residues in animal products and the emergence of resistance microorganism associated with particular use of antibiotics (Salyers, 1999). In spite of this ban, the poultry industries especially in hot-humid climate like Indonesia have faced difficulties in adopting it. This is mainly due to high environmental stress especially in small-scale poultry producers who use an open cage house. Antibiotics remain an effective feed additive in these poultry production settings as it can suppress

mortality, support maximal growth and hence profitable. The following field research was carried out to study the use of antibiotics in feed and medication program by broiler producers in Semarang regions, Central Java. The broiler producers have been using the commercial feeds produced by local well known feed companies. The antibiotic use was also studied for its effect on the concentration of serum cholesterol and the activity of Serum Glutamic Oxaloacetic Transaminase (SGOT). These biochemical information would provide additional weights in considering such antibiotics use in commercial broiler production system.

### Materials and Methods

**Field study:** This study was carried out during the broilers production time from October to December 2006, in four broiler producers (BPs) selected randomly and assigned as BP-1, BP-2, BP-3, BP-4. The four broiler producers were located in Semarang region near by Semarang City, Central Java, Indonesia. Each of the