Effects of Lipotropic Products on Productive Performance, Liver Lipid and Enzymes Activity in Broiler Chickens

Khosravinia H1, Chethen PS2, Umakantha B2 & Nourmohammadi R1

1Department of Animal Science, Faculty of Agriculture, Lorestan University, Khoramabad, Iran.
2Department of Poultry Science, Veterinary College, UAS, Hebbal, Bangalore, India.

Abstract
In a 42-d experiment, 576 one-day-old Vencobb 308 broiler chicks were used to investigate the effects of lecithin extract (0.5 g/kg), choline chloride 60% (1 g/kg) and Bio choline (1 g/kg) in diets of moderate and high energy in a 4 × 2 factorial arrangement on performance and certain physiological traits in broiler chickens. Inclusion of Bio choline and lecithin extract in diet significantly increased average daily gain and improved feed conversion ratio in overall (1 to 42 d) period (P < 0.05). Performance efficiency index was improved in the birds fed with Bio choline compared to those fed control diet. Broilers fed on diets containing Bio choline and lecithin extract had less abdominal fat percentage than those fed choline chloride or control diet. Regardless of dietary energy level, supplementation of diet with Bio choline, choline chloride and lecithin extract significantly decreased liver lipid concentration (P < 0.05). Aspartate aminotransferase activity increased in the serum of broilers fed high energy diets, while it was decreased in the birds received diets containing choline chloride. Lipotropic compounds decreased serum aspartate aminotransferase activity in the birds fed on high energy diets. Addition of Bio choline and lecithin extract to diet significantly decreased serum γ-glutamyl transferase activity (P < 0.05). Results of the present study revealed that dietary supplementation of commercial lipotropic compounds could remove potential detrimental effects from high energy diets through reducing liver fat and maintaining liver health.

Introduction
The use of high energy diets aim at shortening the rearing period may increase metabolic disorders such as fatty liver syndrome (FLS) in broiler chickens (Leeson et al., 1995). Increased abdominal fat pad (Corduk et al., 2007), incidence of leg problems (van Emous et al., 2015) and hypertension (Gopi et al., 2014) are some other detrimental responses associated with high energy diets (Buyse et al., 2001). Fatty liver syndrome is a condition that generally affects fast growing broilers fed high energy diets and caged layers with inadequate chance to move and exercise freely (Jiang et al., 2013). FLS is described as a metabolic disorder caused by deficiency of methyl group donors in feed and decreased gluconeogenesis in liver due to biotin.