The efficacy of lactic acid bacteria
*Pediococcus acidilactici*, lactose and formic acid
as dietary supplements for turkeys

S. Wajda¹, K. Śmiecińska¹, J. Jankowski², P. Matusevičius³, G. Buteikis³

¹ Department of Commodity Science of Animal Raw Materials, University of Warmia and Mazury in Olsztyn,
Oczapowskiego 5, 10-719 Olsztyn, Poland

² Department of Poultry Science, University of Warmia and Mazury in Olsztyn,
Oczapowskiego 5, 10-719 Olsztyn, Poland

³ Faculty of Animal Husbandry, Lithuanian Veterinary Academy, Tiles st. 18, LT – 47181 Kaunas, Lithuania

Abstract

A feeding trial was performed on 1400 Big-6 turkey toms divided into experimental groups subject to the use of dietary supplements. The aim of this study was to evaluate the efficacy of the probiotic supplement Bactocell, containing lactic acid bacteria *Pediococcus acidilactici*, and lactose, administered to turkeys separately or in combination, as well as a formic acid supplement.

The addition of the probiotic under test (lactic acid bacteria *Pediococcus acidilactici*) to diets for turkeys contributed to higher daily gains and lower feed consumption per kg weight gain only during the first 12 weeks of their life. Diet supplementation with lactic acid bacteria and lactose reduced mortality rates. A slaughter value analysis revealed only a slightly (by approximately 1%) higher content of breast muscle and a lower content of thigh muscle in birds fed diets supplemented with lactic acid bacteria. Turkeys receiving lactic acid bacteria or lactose and a combination of both these supplements were characterized by a higher fat content of meat and slightly lower pH values, whereas meat from turkeys fed lactose-supplemented diets was darker in color. The addition of formic acid *Acidum formicum* to diets for turkeys contributed only to lower mortality rates.

Key words: turkeys, probiotics, lactose, formic acid, slaughter value, meat quality

Introduction

The ban on the use of antibiotic growth promoters prompted the search for alternative feed supplements exerting a similar effect in poultry nutrition. Such substances are inclusive of enzymes, probiotics, prebiotics, phytobiotics and organic acids (Sims et al. 2004, Kalavathy et al. 2005). According to Vanbella et al. (1990), live bacteria and yeast cultures antagonize the growth of pathogenic bacteria in the intestine and have a beneficial influence on the health and well-being of animals. *Pediococcus acidilactici* is a probiotic bacterial strain which promotes the homeostasis of the intestinal microflora and boosts immunity in animals (Jin et al. 2000). Probiotic supplements stimulate the intestinal microflora and increase the animals resistance to disease (Mathew 2002, Patterson and Burkholder 2003). Many authors (Simoyi et al. 2006, McReynolds et al. 2007, Torres-Rodriguez et al. 2007, Vicente et al. 2007) emphasize the importance of lac-