Escherichia coli strains from ostriches and their sensitivity to antimicrobial substances

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Abstract

Ostriches are bred especially for their high-quality meat. There is a lack of knowledge concerning the ostrich’s microflora. *Escherichia coli* is a commensal microorganism of the poultry intestine, ostriches included. However, some strains may become pathogenic. This study was therefore undertaken to detect coliform bacteria in ostrich faeces and to test their antibiotic profile and sensitivity to enterocins. Faeces (n=54, 18 mixture samples from 3 different age groups of 140 ostriches) were sampled to isolate coliform bacteria. The counts of coliform bacteria varied from $5.69 \pm 2.4 \log_{10}$ CFU/g to $5.73 \pm 2.4$ CFU/g. Pure colonies were identified using MALDI-TOF MS mass spectrometry and confirmed by phenotypization. Seventy-one strains were allotted to the species *E. coli*. Sixty-four of those 71 strains caused hemolysis. They were mostly polyresistant to antibiotics. Thirty-two polyresistant strains of *E. coli* were sensitive to enterocins. These strains were most sensitive to Ent 9296 (26 strains). Moreover, Ent EM41 produced by *E. faecium* EM41 (isolated from ostrich faeces) inhibited the growth of 20 strains, reaching activity of 100 AU/ml. Our results indicate the possibility of enterocins being used for prevention/reduction of coliforms. Of course, *in vivo* studies are also being processed.

Key words: *Escherichia coli*, ostriches, sensitivity, antibiotic, enterocin

Introduction

*Escherichia coli* is a commensal microorganism in the intestine of human and warm-blooded animals, including poultry (De Vos et al. 2009). Poultry species are widely known as food-producing animals. Animal-derived food can be contaminated during slaughtering e.g. by *E. coli*. Pathogenic serotypes of *E. coli* cause a variety of lesions in immunocompromised hosts as well as in poultry (Kunert et al. 2015). *E. coli* of animal meat origin has been associated with extraintestinal infections in humans, e.g. urinary tract infections (Hammerum and Heuer 2009). Poultry farming is an effective livestock sector which is increasingly focused on the less traditional varieties of food-producing animals e.g. ostriches (*Struthio*). There are several farms which breed ostriches mainly for their high-quality meat. Adult ostriches are resistant to health disorders. However, young birds can be threatened by bacteria such as hemolytic *Escherichia coli*.