

Short communication

A note on the effect of triacylglycerols of caprylic and capric fatty acid on performance, mortality, and digestibility of nutrients in young rabbits

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Abstract

Two experiments, an apparent digestibility trial and a feeding experiment, were carried out to evaluate the effect of medium-chain fatty acids (MCFA) supplied as triacylglycerols (TAG) to a diet of growing rabbits. Hyplus rabbits weaned at the age of 35 days were used. In the digestibility trial 20 rabbits were housed individually, in the feeding experiment 216 rabbits were housed four per cage. Rabbits of experimental groups received a diet supplemented with 10 g kg⁻¹ of Akomed R (TAG of caprylic and capric acid). Coefficient of total tract apparent digestibility (CTTAD) of dry matter, N-free extract and ash was higher by 3.4, 3.8 and 9.9%, respectively, in rabbits fed the diet with Akomed R than in control rabbits ($P < 0.05$). Digestibility of other dietary components, the rate of growth, feed intake and carcass yield were not significantly affected. In the feeding experiment, mortality of treated rabbits (15.7%) was significantly lower than that of control rabbits (27.8%; $P = 0.048$). No effect on growth rate and shedding of *Eimeria* sp. oocysts was observed. It can be concluded that MCFA supplied as TAG of caprylic and capric acid in a commercially available oil significantly decreased high mortality of growing rabbits under practical field conditions, without affecting the rate of growth, feed intake and carcass yield.

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1. Introduction

Digestive problems are responsible for a significant mortality and morbidity of young rabbits after weaning. Etiology of rabbit enteropathies is often unclear because causes are frequently multiple and some pathogenic agents have not yet been identified (reviewed by Licois, 2004). In the Czech Republic rabbit breeders used virginiamycin (a feed antibiotic active against gram-positive bacteria) in combination with salinomycin (a coccidiostat) to prevent enteritis infections, however approval for routine non-therapeutic application of antibiotics is being questioned worldwide. As a consequence of this measure, mortality of young rabbits in the Czech Republic increased from *ca.* 10 to 20%. The rabbit industry has to face this situation. Over the recent years, various strategies for improvement in animal health and production were explored. Among the candidate replacements for antibiotics are fatty acids and their derivatives. Antimicrobial activity of fatty acids has been known for a long time (Hassinen et al., 1951). Nieman (1954) and Kabara et al. (1972) concluded that medium-chain fatty acids (MCFA) with a carbon chain length around 12 C atoms were more active than fatty acids with a short or long carbon chain. Enteropathogenic bacteria differ in susceptibility to MCFA. The utilization of glucose in cultures of *Escherichia coli* was inhibited by caprylic and capric acid (Marounek et al., 2003), whereas the highest antibacterial activity toward *Clostridium perfringens* was that of lauric acid (Skřivanová et al., 2004). These acids contain 8, 10 and 12 atoms of carbon, respectively.

There are several reports on the use of MCFA and triacylglycerols (TAG) of MCFA in animal experiments. TAG of MCFA added to diets of piglets, together with lipolytic enzymes, reduced bacterial load in the stomach and duodenum and increased weight gain (Dierick et al., 2002). Caprylic acid supplied to a diet of piglets increased weight gain whereas TAG of caprylic and capric acid without a lipase addition had no effect on growth rate (Marounek et al., 2004). Skřivanová and Marounek (2002) performed two feeding trials on commercial farms using weaned rabbits 5-week old. Caprylic acid had no effect on total weight gain in either trial, but decreased mortality of rabbits. Its effect on mortality was statistically significant on a farm where rabbit mortality was high. In rabbits, MCFA are synthesized *de novo* in the mammary gland and represent roughly one half of the total fatty acids in the rabbit milk (Jones and Parker, 1981). The purpose of the current study was to evaluate the effect of MCFA supplied as TAG on performance and mortality of rabbits weaned at 35 days of age. A digestibility trial with small number of rabbits was performed at first, to assess the effect of TAG of MCFA on digestibility, growth rate, feed intake and carcass yield. As no adverse effect of TAG of MCFA on above parameters was found, a farm experiment was carried out to evaluate the effect of TAG of MCFA on growth rate and mortality of young rabbits under field conditions.

2. Materials and methods

2.1. Animals and diets

Young rabbits of both sexes, Hyplus genotype, were weaned at the age of 35 days. Rabbits were kept in all-wire cages. In a digestibility trial, rabbits were housed individually in

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