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C-065bis

Intestinal microbiota in monogastrics and interplay with nutritional factors

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The intestinal microbiota and the host organism are affected by a balanced intestinal microbiota in a positive way, a state called eubiosis. In recent years it has become obvious that feed composition, feeding methods and feed additives offer a potential for performance improvement and stabilization of porcine health. Gross composition of feed, defined as balanced content of proteins, carbohydrates, fat and dietary fibre affects the intestinal microbial composition and metabolic acitivity and may stabilize the intestinal function in piglets especially after weaning. Feeding methods can have a major impact on gastrointestinal function and the susceptibility against invading pathogens, for instance *Salmonella*. A good example for gut flora modifiers are probiotics, that are used frequently in European farming practice. Appropriate products are classified as a microbial feed additive and have to undergo comprehensive trials for demonstrating safety and efficacy in accordance with the Regulation (EC) 1831/2003. Probiotic microorganisms must have sufficient stability, first of all against technological processes and further on in the gastrointestinal tract. They can have a regulating effect on the composition and the metabolic reactions of the microbiota, defined as the community of the intestinal microorganisms. Probiotics should not only affect the balance of the intestinal flora, but also have the capability for positive health effects. The effects of the microorganisms in the intestinal lumen can be theoretically explained by a shift in the competitive situation for existing nutrients and a change in the intestinal milieu through production of a broad spectrum of metabolites and molecules including antimicrobials. The reported inhibitory effect against pathogenic intestinal bacteria seems to be based on the influence on the microenvironmental conditions and a competition for epithelial binding sites and receptors, possibly also immune mediated reactions to this microenvironment. An increased colonization protection against pathogenic bacteria and an improved resistance to infectious diseases could be an interesting option for the use of probiotics in livestock in addition to the performance-enhancing effects.

C-066

Dietary fish oil in quarter horses: effects on hemocromocitometric values and plasma fatty acid composition

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Fish oil inclusion in the diet of horses could be of interest due to the beneficial effects already established in other animals, but at present day few references are available in horse nutrition on this topic. The aim of the trial was to evaluate the inclusion of fish oil in the diet of horses on blood parameters and plasma fatty acids composition. Eight Quarter Horses (3 to 8 years of age; 479±14.04 kg) were balanced for age, sex, body weight (BW) and body condition score (BCS) in two experimental groups and fed (FO) or not (C) 40 g/d of fish oil in a two-periods crossover design. The basal diet, established on 2% BW following NRC requirements for light working horses, had a 70:30 forage to concentrate ratio (CP 10.2% DM, EE 3.24% DM, NDF 44.3% DM, ED 23.1 Mcal/d). For each period an adaptation phase of 30 days to the basal diet was provided followed by 30 days of fish oil supplementation with a 17 days wash-out before switching the groups. Diet components and fish oil were analyzed for fatty acids (FA) profile using a modified Folch lipid extraction procedure. Body weight and BCS were measured weekly from the adaptation period. Starting from dietary treatment, individual feed intake was recorded daily, and blood samples were collected every 15 days for plasma fatty acids composition and Complete Blood Count. Data were analyzed using a PROC MIXED of SAS with treatment, time, period, and animal included in the model statement. No influence of fish oil was observed on BW, feed intake and BCS, at the same time no effect was reported on number, rather ratio, of white blood cells. Fish oil increased arachidonic (1.50 *vs* 1.29 g/100 g total FA; $P \leq 0.05$), EPA (1.58 *vs* 0.05 g/100g total FA; $P \leq 0.01$) and DHA (0.64 *vs* 0.05 g/100 g total FA; $P \leq 0.01$), and decrease linoleic (45.69 *vs* 48.72 g/100 g total FA; $P \leq 0.01$) plasma content. The administration of fish oil increased beneficial PUFA fatty acid plasma concentration, with no negative effect on feed intake, but further investigations are needed to determine the possible effects on immune response.