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动物营养专题

本期导读

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中国农业科学院农业信息研究所

联系人：熊本海；郑姗姗；顾亮亮

联系电话：010-62816017

邮箱：agri@ckcest.cn

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学术文献

1 . Inclusion of a fish oil processing fraction as additive in diets for weaning piglets (在断奶仔猪日粮中添加鱼油加工部分作为添加剂)

简介: The weaning process in pig production is commonly associated to low feed intake, slow growth rate and increased morbidity of piglets. This study evaluates a nutritional intervention consisting of supplementing with a fish oil product rich in mono- and diglycerides (FOMG) and containing 0.069 g/g of ω -3, to improve animal health and productive performance during the post-weaning period. In a preliminary experiment (experiment 1), a total of 136 piglets were randomly distributed in two groups (4 pens per group) to evaluate the productive effects of dietary supplementation with FOMG at 15 g/kg (T15) in substitution of lard (T0) as fat source during the post-weaning period in a commercial farm. Besides, in experiment 2 a total of 72 weaned piglets were fed on a control diet (T0) or supplemented with 15 (T15) or 30 g FOMG/kg (T30) in substitution of sunflower oil, with 6 pens of 4 piglets per treatment. In experiment 2 growth and intake were weekly controlled, and blood was sampled on days 14 and 34. At day 35 post-weaning, 6 piglets per treatment were euthanized to study the microbial fermentation and the ileal and caecal bacterial community by 16 S amplicon sequencing. Results indicated that piglets fed T15 diet tended to have a higher growth gain during the post-weaning period in experiment 1 ($P = 0.067$). This increased growth was partially explained by a greater feed intake (0.14 higher) but also due to improved animal health as showed by the lower proportion of neutrophils ($P = 0.006$), blood cortisol ($P = 0.098$) and morbidity ($P < 0.05$) in experiment 2. Treatment T15 also tended ($P = 0.064$) to promote a higher volatile fatty acids (VFA) concentration at the ileum, which could be compatible with a higher nutrient absorption and a subsequent lower VFA concentration in the hindgut ($P < 0.001$). Moreover, FOMG supplementation at T15 exerted modulatory effects on the gut microbiota promoting a shift in the bacterial community structure, lower diversity (Richness index, $P < 0.05$) and a trend ($P = 0.076$) for a higher butyrate proportion at the ileum, together with a lower ($P < 0.05$) and most favourable Firmicutes-to-Bacteroidetes ratio at the caecum. On the contrary, T30 diet promoted less beneficial effects than T15. These findings indicated that supplementation of piglets with FOMG at a level of 15 g/kg represents a suitable strategy to improve pig performance and gut health during the post-weaning period.

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<http://agri.ckcest.cn/file1/M00/03/45/Csgk0YfpK8eAPYHdACVuYMg6MzQ696.pdf>

2. 色氨酸调控生猪肠道屏障功能的研究进展

简介: 色氨酸是生猪日粮的第三限制性氨基酸,在调控采食、免疫、生长及肠道发育等方面发挥重要作用。在日粮中添加适量色氨酸,可以提高猪只的采食量、调控肠道屏障功能,也可以影响肠道氨基酸转运载体的表达。本文针对日粮色氨酸对生猪肠道屏障功能的影响进行了归纳总结。

来源: 中国知网

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3 . Effect of DL-Methionine supplementation above requirement on performance; intestinal morphology, antioxidant activity and gene expression; and serum concentration of amino acids in heat stressed pigs (DL-蛋氨酸补充超过要求对性能的影响；肠道形态、抗氧化活性和基因表达；和热应激猪血清氨基酸浓度)

简介: The intestinal morphology and function can be compromised in pigs exposed to heat stress (HS), partly due to increased production of reactive-oxygen species. Because methionine (Met) functions as intracellular antioxidant, the requirement of Met may be increased in HS-pigs. The effect of dietary supplementation with DL-Met above requirement on performance, small intestine morphology, antioxidant enzymes activity, amino acid transporters expression, and serum concentration (SC) of free AA in HS-pigs was evaluated. A basal wheat-soybean meal diet was formulated to meet 100% Met requirement with the other indispensable AA exceeding at least 20% their requirement. Sixty individually housed pigs (23.0 \pm 2.4 kg BW, 12 pigs/treatment) were randomly assigned to 5 treatments: TN100, thermal-neutral (22.7 \pm 0.5 $^{\circ}$ C) housed pigs fed the basal diet; HS100, HS120, HS140, HS160; HS pigs (29.6 to 39.4 $^{\circ}$ C) fed the basal diet supplemented with DL-Met to contain 0, 20, 40, and 60% DL-Met above the requirement, respectively. Pigs had free access to feed and water during the 21-d trial. Blood samples were collected on d 18 to analyze the absorptive AA-SC. The effect of ambient temperature (HS100 vs. TN100), as well as the linear and quadratic effects of increasing Met levels in the diets for HS pigs were analyzed. The HS100 pigs gained less weight than TN100 and HS120 pigs ($P < 0.01$); gain:feed was also higher in HS120 pigs than in HS100 pigs ($P \leq 0.05$). Feed intake of TN100 pigs was higher than that of HS pigs fed the DL-Met supplemented diets ($P < 0.05$). Villi height reduced in pigs HS, but Met supplementation quadratically increased it ($P < 0.05$). Superoxide dismutase and catalase activities, reduced glutathione concentration, and relative expression of B OAT2 in ileum decreased ($P < 0.05$), but glutathione peroxidase activity increased in HS pigs. DL-Met supplementation linearly affected catalase and glutathione peroxidase activities, as well as the relative expression of b 0,+AT in jejunum ($P < 0.05$) of HS pigs. The SC of Ile, Leu, Lys, Phe, and Val were higher in HS100 pigs than in TN100 pigs ($P < 0.05$). Graded levels of supplemental DL-Met in diets for HS-pigs linearly decreased SC of Ile, Leu, and Val ($P < 0.05$), tended to decrease His, Lys, and Thr ($P < 0.10$), and increased Met ($P < 0.01$). In conclusion, HS had negative effect on weight gain and intestinal morpho-physiology, however, it was ameliorated by adding 20% Met above the requirement in diets for growing pigs.

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<http://agri.ckcest.cn/file1/M00/03/44/Csgk0YfcW8iAEhleABTM8TTb0QE118.pdf>

4. 智能养猪工厂的研究进展与展望

简介: 厂化养猪是畜牧业现代化的重要组成部分,是中国养猪业发展的必然趋势。中国养猪业面临着能繁母猪生产力水平低、健康管理水平低、智能设备利用率低、养殖成本高等产业突出问题。本文从猪群福利化健康养殖工艺、猪舍空气净化技术、猪只生长与健康状态感知技术、以及猪只精准饲喂和养殖机器人等智能作业装备4个方面,分析了智能养猪工厂建设中工艺、技术、装备的研究和发展现状,并对今后智能养猪工厂建设的重点方向进行了展望,以期为中国智能养猪工厂的创制提供参考。

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5. 畜禽生产中豆粕减量替代技术的研究进展分析

简介: 饲料原料供给会影响畜牧业发展。目前国内自产大豆作为重要的饲料原料存在供应紧张,进口依存度高等问题,无法满足畜牧业发展的需要。为适应大宗饲料供需趋紧的新形势,提高原料利用效率、构建新型日粮配方结构、推进其他蛋白源对豆粕的替代作用势在必行。因此,本文综述了多种不同饲料原料替代豆粕的研究进展,分析了不同替代方法和实用价值,为实现畜禽生产中豆粕减量替代降低成本,提高我国畜牧业国际竞争力具有理论参考价值和指导意义。

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