



2022年第28期总351期

动物营养专题

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2022年7月11日

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学术文献

1. 柑橘提取物对肥育猪后肠食糜蛋白质代谢产物的影响

简介: 【目的】通过研究柑橘提取物对肥育猪后肠食糜蛋白质代谢产物的影响,旨在为柑橘提取物从源头调控臭气的产生提供依据。【方法】选取108头56日龄(19.73±0.39) kg杜×长×大猪,公母各半,随机分为3组,每组分6栏,每栏6头猪。对照组饲喂基础饲料,抗生素组在基础饲料中添加75 g/t金霉素,柑橘提取物组在基础饲料中添加柑橘提取物(56~112日龄添加250 mL/t柑橘提取物,113~194日龄添加200 mL/t柑橘提取物)。194日龄时收集肥育猪盲肠和结肠食糜,测定食糜中游离氨基酸、酚和吡啶类物质、生物胺的含量。【结果】(1)在盲肠食糜中,与对照组相比,柑橘提取物组和抗生素组牛磺酸、天冬氨酸、丙氨酸、缬氨酸、亮氨酸、赖氨酸、组氨酸、精氨酸、吡啶和甲胺含量均显著降低($P<0.05$)。与对照组相比,柑橘提取物有降低苏氨酸、丝氨酸、谷氨酸、甘氨酸、瓜氨酸、异亮氨酸、脯氨酸和粪臭素含量的趋势($0.05\leq P<0.10$),苯酚、腐胺、酪胺和精胺含量均显著降低($P<0.05$)。与抗生素组相比,柑橘提取物组腐胺和酪胺含量均显著减少($P<0.05$)。(2)在结肠食糜中,与对照组相比,柑橘提取物组和抗生素组天冬氨酸、丝氨酸、异亮氨酸、胱硫醚、亮氨酸、 γ -氨基丁酸、总氨基酸、苯酚、对甲酚、粪臭素和甲胺含量均显著降低($P<0.05$),脯氨酸和吡啶含量均有降低的趋势($0.05\leq P<0.10$)。柑橘提取物组丝氨酸、异亮氨酸、胱硫醚、亮氨酸、总氨基酸和对甲酚含量均显著低于抗生素组($P<0.05$);与对照组相比,柑橘提取物组苏氨酸、谷氨酸、甘氨酸、鸟氨酸和酪胺含量均显著降低($P<0.05$),亚精胺含量有降低的趋势($0.05\leq P<0.10$);与对照组和抗生素组相比,柑橘提取物组苯丙氨酸、色氨酸和赖氨酸含量均显著降低($P<0.05$)。【结论】柑橘提取物降低了肥育猪后肠食糜蛋白质代谢产物的含量,可减少臭气的产生。

来源: 中国知网

发布日期: 2022-06-30

全文链接:

<http://agri.ckcest.cn/file1/M00/03/36/Csgk0YcZV5uAQ1ZAAAN-sYL0z64198.pdf>

2. 不同蛋白源对仔猪生长性能和健康状况的影响

简介: 试验旨在研究断奶仔猪饲料中不同蛋白质原料对仔猪生长和健康的影响,寻找可以替代喷雾干燥血浆蛋白粉和鱼粉的优质原料。选择35日龄断奶仔猪108头,按体重将其随机分为4组,每个组4个重复,每个重复6~8头仔猪,公、母各半。处理1组蛋白原料为喷雾干燥血浆蛋白粉和鱼粉,处理2组为低水平的马铃薯蛋白和鱼粉,处理3组为高水平的马铃薯蛋白和鱼粉,处理4组为蚯蚓蛋白和鱼粉。试验期25 d。结果显示:日粮中添加喷雾干燥血浆蛋白粉和鱼粉的断奶仔猪生长和健康状况最佳。与马铃薯蛋白相比,日粮中添加蚯蚓蛋白的仔猪平均日增重(ADG)和平均日采食量(ADFI)较高。添加低水平的马铃薯蛋白比高水平添加对仔猪生长更好。研究表明,断奶仔猪日粮配置中,国产马铃薯蛋白和蚯蚓粉还不能完全替代血浆蛋白粉,蚯蚓粉替代血浆蛋白粉和鱼粉对仔猪生长性能的效果优于马铃薯蛋白粉。

来源: 中国知网

发布日期: 2022-06-28

全文链接:

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3 . Functional amino acid supplementation postweaning mitigates the response of normal birth weight more than for low birth weight pigs to a subsequent Salmonella challenge (断奶后补充功能性氨基酸比低出生体重猪对随后沙门氏菌挑战的反应减轻更多)

简介: Previous work has shown that dietary supplementation with key functional amino acids (FAA) improves growth performance and immune status of disease-challenged normal birth weight (NBW) pigs. It is not known whether FAA supplementation attenuates the effects of a subsequent disease challenge or whether this response is similar in low birth weight (LBW) pigs. The objective was to determine the effects of birth weight and FAA supplementation during the postweaning period in Salmonella-challenged pigs. Thirty-two LBW (1.08 ± 0.11 kg) and NBW (1.58 ± 0.11 kg) pigs were assigned to a nursery feeding program at weaning (25 d) for 31 days in a 2 × 2 factorial arrangement. Factors were birth weight category (LBW vs. NBW) and basal (FAA) or supplemented FAA profile (FAA+; Thr, Met, and Trp at 120% of requirements). At d 31, pigs were placed onto a common grower diet and, after a 7-d adaptation period, were inoculated with Salmonella Typhimurium (ST; 2.2 × 10⁹ colony-forming units/mL) and monitored for 7-d postinoculation. Growth performance, rectal temperature, fecal score, indicators of gut health, ST shedding score in feces, intestinal ST colonization and translocation, and blood parameters of acute-phase response and antioxidant balance were measured pre- and postinoculation. Inoculation with ST increased temperature and fecal score, and the overall rectal temperature was higher in LBW compared to NBW pigs (P < 0.05). Postinoculation (d 7), reduced:oxidized glutathione was increased in NBW compared to LBW pigs (P < 0.05). Salmonella shedding and translocation to spleen were lower in NBW-FAA+ compared to NBW-FAA- pigs (P < 0.05). Postinoculation average daily gain was higher in NBW-FAA+ (P < 0.05) compared to the other groups. Postinoculation haptoglobin, superoxide dismutase, and colonic myeloperoxidase were increased in LBW-FAA- pigs (P < 0.05). Ileal alkaline phosphatase was decreased in LBW compared to NBW (P < 0.05). Overall, FAA supplementation represents a potential strategy to mitigate the effect of enteric disease challenge in NBW, but not LBW pigs.

来源: 中国知网

发布日期: 2022-06-28

全文链接:

<http://agri.ckcest.cn/file1/M00/03/36/Csgk0YcZXkeALPjQAA74APN6X84000.pdf>

4 . Dietary supplementation with branched-chain amino acids enhances milk production by lactating sows and the growth of suckling piglets (日粮中添加支链氨基酸提高泌乳母猪的产奶量和哺乳仔猪的生长)

简介: Background: Under current dietary regimens, milk production by lactating sows is insufficient to sustain the maximal growth of their piglets. As precursors of glutamate and

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glutamine as well as substrates and activators of protein synthesis, branched-chain amino acids (BCAAs) have great potential for enhancing milk production by sows. Methods: Thirty multiparous sows were assigned randomly into one of three groups: control (a corn- and soybean meal-based diet), the basal diet + 1.535% BCAAs; and the basal diet + 3.07% BCAAs. The ratio (g/g) among the supplemental L-isoleucine, L-leucine and L-valine was 1.00:2.56:1.23. Diets were made isonitrogenous by the addition of appropriate amounts of L-alanine. Lactating sows had free access to drinking water and their respective diets. The number of live-born piglets was standardized to 9 per sow at d 0 of lactation (the day of parturition). On d 3, 15 and 29 of lactation, body weights and milk consumption of piglets were measured, and blood samples were obtained from sows and piglets 2 h and 1 h after feeding and nursing, respectively. Results: Feed intake did not differ among the three groups of sows. Concentrations of asparagine, glutamate, glutamine, citrulline, arginine, proline, BCAAs, and many other amino acids were greater ($P <  0.05$) in the plasma of BCAA-supplemented sows and their piglets than those in the control group. Compared with the control, dietary supplementation with 1.535% and 3.07% BCAAs increased ($P   <   0.05$) concentrations of free and protein-bound BCAAs, glutamate plus glutamine, aspartate plus asparagine, and many other amino acids in milk; milk production by 14% and 21%, respectively; daily weight gains of piglets by 19% and 28%, respectively, while reducing preweaning mortality rates by 50% and 70%, respectively. Conclusion: Dietary supplementation with up to 3.07% BCAAs enhanced milk production by lactating sows, and the growth and survival of their piglets.

来源: 中国知网

发布日期:2022-06-17

全文链接:

<http://agri.ckcest.cn/file1/M00/10/08/Csgk0GLCrkCAY4sbAApFnBiLUdY882.pdf>

5. 发酵山楂渣对仔猪生长性能、后肠道菌群和粪便臭味物质的影响

简介: 试验旨在研究饲料中添加发酵山楂渣及不同添加方式对仔猪生长性能、后肠道菌群和粪便臭味物质的影响。选取160头体重相近的保育后期杜×长×大三元仔猪，随机分为4组，每组4个重复（每个重复10头猪）。对照组（D组）饲喂基础饲料，3个试验组（S1组、S2组和S3组）饲喂90%基础饲料+10%发酵山楂渣饲料，其中S1组发酵山楂渣饲料与基础饲料一同制粒，S2组单独料槽分别饲喂基础饲料和发酵山楂渣饲料，S3组混合后一同饲喂。结果显示：饲料中添加发酵山楂渣能够改善仔猪生长性能，提升仔猪肠道微生物多样性，有效降低猪粪便中的臭味物质。其中发酵山楂渣饲料与基础饲料一同制粒的添加方式效果最佳，对养分消化率影响最小并能提高对粗蛋白的消化率，与对照组相比，仔猪平均日增重显著提高8.36% ($P < 0.05$)，料重比显著降低15.04% ($P < 0.05$)，有效降低仔猪粪便中粪臭素等臭味物质的含量。结果表明，发酵山楂渣饲料替代10%基础饲料在仔猪饲养中具有提高生长性能、改善猪舍气味、提高饲喂效果和增加经济效益等优势。

来源: 中国知网

发布日期:2022-06-16

全文链接:

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