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动物营养专题

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前沿资讯

1．越南非洲猪瘟疫苗安全性评价

简介：越南中央动物药业股份公司（Navetco）研发和生产的非洲猪瘟疫苗的商品名为NAVET-ASFVAC，在6月3日越南对外公布该项疫苗的生产成果，并且颁布该疫苗的上市许可，该消息报道一出，引起了全世界范围内无论是猪只传染病还是养殖方面同行专家的一阵讨论热潮；而疫苗上市首要考虑问题是安全性问题，而在Viruses上发表的《Evaluation of the Safety Profile of the ASFV Vaccine Candidate ASFV-G-ΔI177L》就是针对该疫苗安全性所做的研究，而以下是对该文章结果部分的汇总分析。该文章从接种ASFV-G-I177L接种后排毒情况及传播评价、实验猪和未接种混饲猪血液中病毒测定和抗体转阳率、ASFV-G-I177接种过量试验（接种疫苗1倍、5倍10倍后看临床症状）、ASFV-G-I177疫苗在猪上连续传代5次的体温变化和病毒滴度等四个方面对ASFV-G-I177L疫苗进行安全评价。

来源：中国饲料行业信息网

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全文链接:

http://agri.ckcest.cn/file1/M00/03/36/CsgkOYcQID-AfBvOABRh_9lGFC4227.pdf

2．2022年美对华猪肉出口量同比下降

简介：美国农业部6月发布的《牲畜、乳制品和家禽展望》称，美国 4 月份猪肉出口量为 5.29 亿磅，比 2021 年 4 月的出口量下降 19%。同比大幅下降的主要原因是对中国内地/香港的出口量减少，自 2020 年 12 月以来，中国内地/香港从美国猪肉的采购量同比下降，因为中国猪肉行业加速从非洲猪瘟中反弹。美国 4 月份的猪肉出口再次严重依赖对墨西哥的出口，对墨西哥的出口量为 1.84 亿磅，比 2021 年 4 月高出 20%。4 月份对墨西哥的出口占美国当月出口总额的 35%。由于价格相对较高和与 HPAI 相关的贸易限制，尤其是火鸡肉，墨西哥对美国禽肉的进口减少可能会支撑墨西哥对美国猪肉的需求。

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学术文献

1．Lactobacillus plantarum supplementation alleviates liver and intestinal injury in parenteral nutrition-fed piglets（补充植物乳杆菌可以减轻肠外营养仔猪的肝和肠损伤）

简介：OBJECTIVE：Long-term parenteral nutrition (PN) causes parenteral nutrition-associated liver disease (PNALD) for which therapeutic approaches are limited. This study aimed to investigate the effects of Lactobacillus plantarum CGMCC 1258 (LP) on liver and intestinal injury in the PN-fed neonatal piglets. METHODS： The piglets received PN with or without oral

LP for 14 days. The levels of liver enzymes and inflammatory markers were measured using biochemical kits and q-RT-PCR. Serum fibroblast growth factor 19 (FGF19) was detected using an enzyme-linked immunosorbent assay (ELISA). The bile acid profiles in the liver, serum, and intestinal contents were determined using ultraperformance liquid chromatography coupled with mass spectrometry (UPLC-MS). The composition of intestinal bacteria was analyzed with 16S rRNA gene amplicon sequencing. RESULTS：LP supplementation was associated with improved markers of liver disease, inflammation, and oxidative stress in PN-fed piglets. Moreover, markers of intestinal injury and inflammation were alleviated by LP in PN-fed piglets. Mechanistically, LP increased the abundance of Lactobacillus in ileal contents and stimulated FGF19 expression in ileal mucosa. Subsequently, it increased the expression of small heterodimer partner (SHP) and inhibited cholesterol 7α-hydroxylase (CYP7A1) expression in the liver. Additionally, LP altered the systemic composition and metabolism of bile acids. CONCLUSIONS：LP alleviated liver and intestinal injury in PN-fed neonatal piglets by altering the composition of intestinal bacteria and bile acids. This article is protected by copyright. All rights reserved.

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2．Oxidation of amino acids, glucose, and fatty acids as metabolic fuels in enterocytes of developing pigs(氨基酸、葡萄糖和脂肪酸在发育猪肠细胞中的氧化作为代谢燃料)

简介：Enterocytes of young pigs are known to use glutamine, glutamate, and glucose as major metabolic fuels. However, little is known about the roles of aspartate, alanine, and fatty acids as energy sources for these cells. Therefore, this study simultane?ously determined the oxidation of the amino acids and glucose as well as short- and long-chain fatty acids in enterocytes of developing pigs. Jejunal enterocytes were isolated from 0-, 7-, 14- and 21-day-old piglets, and incubated at 37 °C for 30 min in KrebsHenseleit bicarbonate bufer (pH 7.4) containing 5 mM d-glucose and one of the following: d-[U-14C]glucose, 0.55 mM l-[U-14C]glutamate, 0.55 mM l-[U-14C]glutamine, 0.55 mM l-[U-14C]aspartate, 0.55 mM l-[U-14C]alanine, 0.52 mM l-[U-14C]palmitate, 0.55 mM [U-14C]propionate, and 0.55 mM [1-14C]butyrate. At the end of the incubation, 14CO2 produced from each 14C-labeled substrate was collected. Rates of oxidation of each substrate by enterocytes from all age groups of piglets increased ($P < 0.05$) gradually with increasing its extracellular concentrations. The rates of oxidation of glutamate, glutamine, aspartate, and glucose by enterocytes from 0- to 21-day-old pigs and of alanine from newborn pigs were much greater ($P < 0.05$) than those for the same concentrations of palmitate, propionate, and butyrate. Compared with 0-day-old pigs, the rates of oxidation of glutamate, aspartate, glutamine, alanine, and glucose by enterocytes from 21-day-old pigs decreased ($P < 0.05$) markedly, without changes in palmitate oxidation. Oxidation of alanine, propionate, butyrate and palmitate by enterocytes of pigs was limited during their postnatal growth. At each postnatal age, the oxidation of

glutamate, glutamine, aspartate, and glucose produced much more ATP than alanine, propionate, butyrate and palmitate. The degradation of glutamate was initiated primarily by glutamate-pyruvate and glutamate-oxaloacetate transaminases. Our results indicated that amino acids (glutamate plus glutamine plus aspartate) are the major metabolic fuels in enterocytes of 0- to 21-day-old pigs.

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3．不同水平发酵豆粕对猪肌肉中氨基酸、脂肪酸及肌苷酸含量的影响

简介：试验旨在研究不同水平发酵豆粕对猪背最长肌中氨基酸、脂肪酸及肌苷酸含量的影响。试验选取240头初重为（60.38±1.87） kg的“杜×长×大”猪，随机分成5组，每组4个重复，每个重复饲养12头猪。对照组为喂基础日粮，试验Ⅰ组、Ⅱ组、Ⅲ组、Ⅳ组在基础日粮中分别添加4%、6%、8%、10%的发酵豆粕。采用HPLC法检测背最长肌中肌苷酸含量，气相色谱法检测脂肪酸含量，全自动氨基酸分析仪检测氨基酸含量。结果显示，与对照组相比，试验组肉中的苯丙氨酸（Phe）含量极显著提高（P<0.01），天冬氨酸（Asp）和谷氨酸（Glu）含量显著增加（P<0.05）；试验Ⅰ组、Ⅱ组、Ⅳ组的甘氨酸（Gly）和丙氨酸（Ala）含量显著增加（P<0.05），试验Ⅲ组的甘氨酸（Gly）、丙氨酸（Ala）含量分别极显著增加22.62%、21.34%（P<0.01）；试验Ⅲ组的必需氨基酸（EAA）、非必需氨基酸（NEAA）、鲜味氨基酸（DAA）总量和总氨基酸（TAA）含量分别显著提高12.72%、9.81%、13.86%、10.66%（P<0.05）。试验Ⅲ组EAA/TAA最接近40%,EAA/NEAA比值最高，必需氨基酸指数（EAAI）最大，色氨酸（Trp）是第一限制性氨基酸；试验组的豆蔻酸（C12∶0）、棕榈酸（C16∶0）和硬脂酸（C18∶0）含量显著减少，亚油酸（C18∶1n9）显著增加；试验Ⅰ组、Ⅱ组、Ⅳ组的亚麻酸（C18∶3n-3）含量显著增加（P<0.05），试验Ⅲ组的亚麻酸含量极显著增加26.44%（P<0.01），棕榈油酸（C16∶1）含量显著增加12.84%（P<0.05）；试验组的饱和脂肪酸（SFA）显著降低（P<0.05），试验Ⅲ组的不饱和脂肪酸（UFA）显著提高9.22%，多不饱和脂肪酸（PUFA）显著提高13.88%（P<0.05）、PUFA/SFA比值最大。试验Ⅲ组的肌苷酸含量显著提高12.18%（P<0.05）。研究表明，日粮中添加8%的发酵豆粕，显著提高了猪肉的营养价值，有效改善了猪肉的口感、香味及鲜味和风味。

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