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动物营养专题

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前沿资讯

1．世界最大养猪大楼8月底正式投产！高达26层，每年可养猪60万头，猪业发展再迎新活力……

简介：我国是世界第一养猪大国，全球每年60%的生猪出栏量都在我国，然而我国每年的猪肉消耗量达5500万吨，因此还需要从美国等国家进口不少猪肉来满足我国巨大的猪肉消耗量，这也倒逼着我国提升生猪饲养量，因此养猪在我国也是一个很受关注的发财之道。可能不少朋友对养猪场地的概念还停留在猪圈或者大棚上，实际上我国很多的养猪企业早就开始了楼房式的大规模养猪方式，搞笑点说就是“猪早就住上楼房了”。今年7月中旬有媒体报道称湖北鄂州一座高达26层的楼房猪场就要投用了。这座巨型养猪大楼属于湖北中新开维现代牧业有限公司，始建于2020年8月份，去年7月份封顶，当时业界称这座养猪大楼一举刷新了全国乃至全球楼房猪场的天际线。这座巨型养猪设施用地约60亩，其中生产大楼规划建筑面积高达40万㎡，大约相当于600亩地的面积，楼房采用立体钢筋混凝土高架结构，非常坚固结实，大楼上使用的电梯可承载40吨重的重量，被认为是全国第1台40吨重的重载货梯，其货梯轿厢尺寸为5.5m×12m，梯内面积65平方米，可一次运载二百多头猪。

来源：中国饲料行业信息网

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http://agri.ckcest.cn/file1/M00/10/0B/CsgkOGLfj9GANrGxABGRTx9OY1o827.pdf

2．研究揭示低聚木糖改善仔猪肠道功能的分子机制

简介：近日，中国农业科学院北京畜牧兽医研究所家畜营养与调控科技创新团队研究揭示低聚木糖通过优化肠道菌群改善断奶仔猪肠道屏障与免疫功能的分子机制，为提高断奶仔猪抗病能力，促进生猪高效健康养殖提供了理论依据。相关研究发表在《碳水化合物聚合物（Carbohydrate Polymers）》。在“禁抗”大背景下，断奶仔猪腹泻与抗病能力低下问题突出，给养猪业造成巨大经济损失。研究团队前期梳理了低聚木糖在提高仔猪抗病力方面的应用价值，发现低聚木糖可通过改善肠道屏障和调节肠道免疫来增强断奶仔猪的肠道健康，但具体作用机制尚不清楚。该研究进一步揭示，低聚木糖增强肠道屏障功能，调节肠道免疫的具体调控机制表现在两个方面：一是低聚木糖可以增加Lactobacillus等有益菌，减少潜在致病菌，进而增强肠道屏障完整性，抑制促炎细胞因子表达，导致免疫球蛋白A的产生过程及抗原交叉呈递过程减弱；二是低聚木糖通过Notch和Wnt/β-catenin信号通路调节肠上皮细胞增殖或凋亡以及肠杯状细胞分化，重塑能量代谢途径。该研究得到国家自然科学基金、中国农业科学院创新工程等项目的资助。

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学术文献

1．Relationship between virulence factors and antimicrobial resistance genes of pathogenic Escherichia coli from diarrheic weaned piglets(腹泻型断奶仔猪致病性大肠杆菌毒力因子与耐药基因的关系)

简介： A total of 690 pathogenic Escherichia (E.) coli isolates from weaned piglets were examined for antimicrobial resistance phenotypes, resistance genes, and virulence gene profiles. Also, 29 enterotoxigenic E. coli (ETEC) and 35 Shiga-toxin producing E. coli (STEC) isolates were analyzed using multi-locus sequence typing (MLST). Comparisons of the associations between antimicrobial resistance phenotypes, resistance genes, and virulence genes were performed separately by assessing odds ratio (OR). Although majorities of associations were not confirmed however, we found that associations between specific virulence factors-antimicrobial resistance. F18 encoding isolates showed association with resistance to cefazolin (OR = 3.08) and cefoxitin (OR = 3.65), and also with antimicrobial resistance gene mcr-3 (OR = 4.58). There was a high correlation between F4-STb (OR = 13.56), F4-LT (OR = 8.77), F4-EAST-I (OR = 4.97), and F18-Stx2e (OR = 3.83). Most of ETEC (21 of 29, 72.4%) isolates were assigned to ST100, and 20 of 35 STEC isolates (57.1%) were ST1. There were 5 clusters, and each cluster showed specific antimicrobial resistance patterns. Cluster I showed resistance to gentamicin, streptomycin, neomycin, nalidixic acid, ciprofloxacin, norfloxacin, trimethoprim / sulfamethoxazole, and tetracyclines whereas, cluster V showed resistance to ampicillin, amoxicillin / clavulanic acid, cephalothin, cefoxitin, cefazolin, norfloxacin, and colistin. Although there is need to do more experiments to clarify why certain virulence factors showed relationship with antimicrobial resistance, it is clear that there is a significant association between specific virulence genes and antimicrobial resistance in E. coli from weaned piglets with enteric colibacillosis in Korea.

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2．低蛋白饲粮对杜长大猪生长性能、肉品质和抗氧化的影响

简介：[目的]研究低蛋白饲粮下添加氨基酸对生长育肥猪生产性能、肉品质和抗氧化活性的影响。[方法]选取平均体质量（24.6±0.95） kg/头杜洛克×长白×大白杂交猪（杜长大杂交猪）63头,随机分3组,即对照组（基础饲粮）、低蛋白Ⅰ组（粗蛋白水平较对照低1%）和低蛋白Ⅱ组（粗蛋白水平较对照低2%）,每组3个重复,每个重复7头猪,试验期105 d,分为3个饲养阶段,第1阶段猪体质量为25～50 kg/头,第2阶段为50～75 kg/头,第3阶段为75～110 kg/头,研究低蛋白饲粮对保育-生长-育肥全期杜长大猪生长性能、肉品质、抗氧化能力和血液生化指标的影响。[结果]与对照组相比,2个低蛋白处理组的平均日采食量、平均日增质量、料重比均无显著差异（P>0.05）。各组间的肉质红度a*、黄度b*、亮度L和蒸煮损失无显著差异（P>0.05）;而低蛋白Ⅱ组滴水损失较对照组显著增加（P<0.05）。与对照组相比,低蛋白处理组超氧化物歧化酶（SOD）活

性显著提高（P<0.05）。低蛋白Ⅱ组总抗氧化能力（T-AOC）较对照组显著提高,总胆固醇含量与低蛋白Ⅰ组相比显著升高（P<0.05）,其他血液生化指标总蛋白、白蛋白、甘油三酯、高密度脂蛋白胆固醇、低密度脂蛋白胆固醇和尿素氮含量与对照组和低蛋白Ⅰ组间均差异不显著（P>0.05）。[结论]在补充氨基酸的基础下饲喂低蛋白饲粮,对生长育肥猪的生长性能、肉品质、血液生化指标无显著负面影响,且可在一定程度上提高肌肉抗氧化能力。

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3．The Effect of Standardized Ileal Digestible Isoleucine:Lysine in Diets Containing 20% Dried Distillers Grains with Solubles on Finishing Pig Performance and Carcass Characteristics(标准化回肠可消化异亮氨酸：赖氨酸在含20 %干酒糟可溶物饲粮中对育肥猪生产性能和胴体特性的影响)

简介：In order to determine the standardized ileal digestible (SID) Ile:Lys requirement in finishing diets containing 20% DDGS, a 56-d study was conducted utilizing 2,268 pigs (DNA 600 x Topigs Norsvin 70, initially 82.3 kg). A total of 6 dietary treatments were fed, including a standard corn-soybean meal (SBM) diet and 5 diets containing 20% DDGS with SID Ile:Lys ratios of 55, 60, 65, 70, and 75%. Dietary treatments were assigned to pens, incompletely balancing for previous treatment, with each treatment being replicated 14 times. Pair-wise comparisons were used to evaluate the impact of dietary treatment on performance and carcass traits while single degree of freedom orthogonal polynomials were used to evaluate dose response of SID Ile:Lys in 20% DDGS diets. Increasing the SID Ile:Lys ratio in diets containing 20% DDGS did not impact pig growth performance criteria in a quadratic or linear fashion (P> 0.18). However, increasing the SID Ile:Lys ratio in 20% DDGS diets resulted in decreased back fat (BF; Quadratic, P = 0.01), increased loin depth (Quadratic, P=0.03), and tended to increase percent lean (Quadratic, P=0.07) with optimal carcass parameters occurring when 65% SID Ile:Lys was supplied in 20% DDGS diets. Pigs fed the corn-SBM diet had a similar final body weight (BW; P = 0.26) and cumulative average daily gain (ADG; P = 0.12) compared to pigs fed a 20% DDGS diet containing 70% SID Ile:Lys ratio and 3% greater cumulative average daily feed intake (ADFI) compared to pigs receiving diets with SID Ile:Lys ratios of 65 and 75% (P< 0.01). In conclusion, these results suggest that when feeding 20% DDGS in late finishing swine diets, a SID Ile:Lys ratio of 70% should be utilized when attempting to achieve similar overall growth performance relative to a corn-SBM diet.

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