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反刍动物氨基酸营养平衡理论及其应用

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Recent Advances in Amino Acid Nutritional Balance Theory for Ruminants and Its Application

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摘要 当前,动物生产者面临着提高畜产品中氨基酸含量和改善畜产品品质以及降低动物粪尿中氨氮排放量的双重任务。依照反刍动物蛋白质营养特点,通过对可吸收氨基酸平衡的调控来降低饲粮中蛋白质饲料用量,最大限度地提高动物对饲料蛋白质的利用效率,减少随粪、尿排出的含氮物质数量是一条节约蛋白质饲料的重要途径。本文就反刍动物的氨基酸营养平衡理论及其应用方面的研究进展进行了综述,并对反刍动物体内不同组织层次包括消化道、肝脏和肝外组织的氨基酸平衡调控的研究方法和评价指标进行了评述。

关键词: 反刍动物 氨基酸 营养平衡理论 应用

Abstract: Currently, animal producers are often facing some dual purpose tasks to increase amino acid content and to improve quality of animal products, as well as to decrease nitrogen output of excrement of farm animals. According to the protein nutritional characteristic of ruminants, the modulation of absorbable amino acid balance is an important way to save protein feeds by decreasing the amount of dietary protein feeds, improving their availability and reducing the quantity of nitrogen-containing material as feces and urine. In this paper, recent advances in amino acid balance theory and its application in ruminants were reviewed, and the study methods and evaluating indexes of amino acid balance in different tissues including the small intestine, liver, portal system as well as peripheral tissues for ruminant were also reviewed.

Keywords: ruminants, amino acid, nutritional balance theory, applied techniques

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- [1] MITCHELL H H,BLOCK R J.Some relationships between the amino acid contents of proteins and their nutritive values for the rat[J].Journal of Biological Chemistry,1964,163:599-620.
- [2] FULLER M F,MCWILLIAM R,WANG T C,et al.The optimum dietary amino acid pattern for growing pigs.2.Requirements for maintenance and for tissue protein accretion[J].British Journal of Nutrition,1989,62:255-267.

- [3] WANG T C,FULLER M F.The optimum dietary amino acid pattern for growing pigs.1.Experiments by amino acid deletion[J]. British Journal of Nutrition,1989,62: 77-89.
- [4] BAKER D H,HAHN J D,CHUNG T K.Nutrition and growth: the concept and application of an ideal protein for swine growth[M]//HOLLIS G H. Growth of the pig.Wallingford,U.K.:CAB International,1993: 133-139.
- [5] FRASER D L,FRSKOV E R,WHITELAW F G.Limiting amino acids in dairy cows given casein as the sole source protein[J].Livestock Production Science,1991,28: 235-525.
- [6] LEVEILLE G A,FISHER R.Amino acid requirements for maintenance in the adult rooster.III.The requirements for leucine,isolencine, valine and threonine,with reference also to the isomers of valine,threonine, and isolencine[J].The Journal of Nutrition,1960,70: 135-140.
- [7] ROGERS Q R,HARPER A E.Amino acid diets and maximum growth in the rat[J].The Journal of Nutrition,1965,87: 267-273.
- [8] PAPAS A M,SNIFFEN C J,MUSCATO T V.Effectiveness of rumen-protected methionine for delivering methionine postruminally in dairy cows [J].Journal of Dairy Science,1984,67(3): 545-552. 
- [9] D'MELLO J P F,LEWIS D.Amino acid interactions in chick nutrition.4.Growth,food intake and plasma amino acid patterns[J]. British Poultry Science,1971,12: 345-358.
- [10] 卢德勋.系统动物营养学导论[M].北京:中国农业出版社,2004.
- [11] 王洪荣.生长绵羊限制性氨基酸和理想氨基酸模式的研究[D].博士学位论文.呼和浩特:内蒙古农业大学,1998.
- [12] CLARK J H,KLUSMEYER T H,CAMERON M R.Symposium:nitrogen metabolism and amino acid nutrition in dairy cattle[J].Journal of Dairy Science,1992,75: 2304-2323.
- [13] ERASMUS L J,BOTHA P M,CRUYWAGEN C W.Effect of protein source on ruminant fermentation and passage of amino acids to the small intestine of lactating cows[J].Journal of Dairy Science,1994,77: 3655-3665.
- [14] 王洪荣,卢德勋,张海鹰,等.饲喂豆饼、亚麻饼和血粉氮源日粮的生长绵羊限制性氨基酸研究[J].动物营养学报,1999,11(增刊): 106-122.
- [15] 甄玉国. 内蒙古白绒山羊氨基酸利用和蛋白质周转规律的研究[D].博士学位论文.呼和浩特: 内蒙古农业大学,2002.
- [16] 王洪荣,张洁.不同碳水化合物结构日粮对山羊瘤胃发酵和微生物氨基酸组成的影响[J].中国农业科学,2011,44(5): 1071-1076.
- [17] WANG M Z,WANG H R,LI G X.The preliminary report on rumen protozoa grazing rate on bacteria with a fluorescence-labeled technique [J].Scientia Agricultura Sinica,2008,7(6): 768-774.
- [18] 王洪荣,徐爱秋,王梦芝,等.氨基酸对体外培养瘤胃微生物生长及发酵的影响[J].畜牧兽医学报,2010,41(9): 1109-1116.
- [19] TITGEMEYER E C,MERCHEN N R,BERGER L L.Evaluation of soybean meal,corn gluten meal,blood meal and fish meal as sources of nitrogen and amino acids disappearing from the small intestine of steers[J].Journal of Animal Science,1989,67: 262-275.
- [20] STORM E,BROWN D S, RSKOV E R. The nutritive value of rumen microorganisms in ruminants.3.The digestion of microbial amino and nucleic acids in, and losses of endogenous nitrogen from the small intestine of sheep[J].British Journal of Nutrition,1983,50: 479-485.
- [21] SEAL C J,PARKER D S. Effect of intraruminal propionic acid infusion on metabolism of mesenteric- and portal-drained viscera in growing steers fed a forage diet: II .Ammonia,urea,amino acids, and peptides[J].Journal of Animal Science,1996,74: 245-256.
- [22] MACREA J C,BRUCE L A,BROWN D S.Effect of utilization of absorbed amino acids in growing lambs given forage and forage:barley diets [J].Journal of Animal Science,1995,61: 277-284.
- [23] SCHAEFER A L,DAVIS S R,HUGHSON G A.Estimination of tissue protein synthesis in sheep during sustained elevation of plasma leucine concentration by intravenous infusion[J]. British Journal of Nutrition,1986,56: 281-288.
- [24] ODDY V H,LINDSAY D B,BARKER P J,et al.Effect of insulin on hind limb and whole-body leucine and protein metabolism in fed and fasted lambs [J].British Journal of Nutrition,1987,58: 437-452.
- [25] LOBLEY G E.Control of the metabolic fate of amino acids in ruminants:a review[J].Journal of Animal Science,1992,70: 3264-3275.
- [26] LOBLEY G E,MILANO G D.Regulation of hepatic nitrogen metabolism in ruminants[J]. Proceedings of the Nutrition Society,1997,56: 547-563.
- [27] MEPHAM T B.Amino acid utilization by lactating mammary gland[J].Journal of Dairy Science,1982,65: 287-298.
- [28] GUINARD J,RULQUIN H.Effects of graded amounts of duodenal infusion of methionine on the mammary up take of major milk precursors in dairy cows[J].Journal of Dairy Science,1995,78: 2196-2207.
- [29] BEQUETTE B J,BACKWELL F R C,CALDER A G.Application of a U-carbon-13-labelled tracer in lactating dairy goats for simultaneous measurements of the flux of amino acids in plasma and the partitioning of amino acids to the mammary gland[J].Journal of Dairy Science,1997,80: 2842-2853.
- [30] 周苗苗,刘红云,吴跃明,等.苏氨酸、苯丙氨酸及其二肽对体外培养奶牛乳腺组织 α s1酪蛋白基因表达的影响[C]//刘建新.中国畜牧兽医学会动物营养学分会第十次学术研讨会论文集·北京:中国农业科学技术出版社,2008.
- [31] 陈智梅.不同氨基酸模式对奶牛 α 酪蛋白合成和激素分泌及脂肪合成影响的研究.硕士学位论文.呼和浩特:内蒙古农业大学,2009.
- [1] 傅祥超,文斌,汪平,张凯,刘汉中.含硫氨基酸对獭兔生长及被毛发育的影响[J]. 动物营养学报, 2013,25(4): 761-767
- [2] 王洪荣,季昀.氨基酸的生物活性及其营养调控功能的研究进展[J]. 动物营养学报, 2013,25(3): 447-457
- [3] 吴頔,蔡志华,魏烨昕,张弛,梁国鲁,郭启高.辣木作为新型植物性蛋白质饲料的研究进展[J]. 动物营养学报, 2013,25(3): 503-511
- [4] 高权新,王进波,尹飞,马向明,施兆鸿.荧光蛋白的研究进展与应用[J]. 动物营养学报, 2013,25(2): 268-274

- [5] 夏伦志, 吴东, 钱坤, 周芬, 汪丽. 小麦型干酒糟及其可溶物在淮南麻黄鸡上能量及氨基酸代谢率的测定[J]. 动物营养学报, 2013, 25(2): 364-371
- [6] 蒋银屏, 王志跃, 周春江, 杨海明. 无氮饲粮法与饥饿法对测定扬州鹅内源性氨基酸排泄量的影响[J]. 动物营养学报, 2013, 25(2): 427-432
- [7] 陈兴, 茅慧玲, 王佳堃, 吴晨晖, 刘建新. 外源纤维酶制剂对青贮玉米体外发酵特性以及甲烷生成的影响[J]. 动物营养学报, 2013, 25(1): 214-221
- [8] 王新星, 卫育良, 梁萌青. 鱼蛋白水解物的特性及其应用[J]. 动物营养学报, 2012, 24(9): 1636-1642
- [9] 詹长江, 张养东, 王加启, 胡涛, 卜登攀, 金迪, 周凌云, 李发弟. 脂多糖对泌乳奶牛乳中氨基酸组成及蛋白质代谢相关基因表达的影响[J]. 动物营养学报, 2012, 24(9): 1770-1777
- [10] 刘庚, 武书庚, 计峰, 张海军, 岳洪源, 高玉鹏, 齐广海. 30~38周龄产蛋鸡理想氨基酸模式的研究[J]. 动物营养学报, 2012, 24(8): 1447-1458
- [11] 杨威, 樊启学, 宗克金, 宋林, 张云龙, 彭聪, 胡培培. 鳕幼鱼对晶体氨基酸的利用效果及赖氨酸需求量的研究[J]. 动物营养学报, 2012, 24(7): 1255-1263
- [12] 陈智亮, 王之盛, 薛白, 邹华国. 氮源和水平对肉牛体外瘤胃发酵特性的影响[J]. 动物营养学报, 2012, 24(6): 1150-1156
- [13] 郭丽君, 牛淑玲, 马倩, 赵衍铜, 柏明娜, 韩文瑜, 冯新, 王贵平, 张晶. 抗菌肽制剂对芦花鸡胸肌肉质性状、游离氨基酸及微量元素含量的影响[J]. 动物营养学报, 2012, 24(4): 722-728
- [14] 任立芹, 赵峰, 谭会泽, 张建智, 米宝民, 赵江涛, 张宏福. 绝食法与无氮饲粮法测定黄羽肉鸡内源性氨基酸排泄量及变异的比较研究[J]. 动物营养学报, 2012, 24(12): 2424-2435
- [15] 张桂杰, 鲁宁, 谭仕彦. 低蛋白质平衡氨基酸饲粮对生长猪生长性能、胴体品质及肠道健康的影响[J]. 动物营养学报, 2012, 24(12): 2326-2334