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CHINESE JOURNAL OF ANIMAL NUTRITION

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动物营养学报 2010, Vol. 22 Issue (04) :1122-1130 DOI: 10.3969/j.issn.1006-267x.2010.04.046

研究简报

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日粮中等硫添加DL-蛋氨酸和蛋氨酸羟基类似物游离酸在幼建鲤上饲喂效果的比较研究

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A Comparative Study of Feeding Effects of Equal-sulfur Supplementation with DL-methionine and Methionine Hydroxy Analogue Free Acid in Juvenile Jian Carp (*Cyprinus carpio* var. Jian)

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摘要 本研究旨在研究日粮中等硫添加DL-蛋氨酸(DL-Met)和蛋氨酸羟基类似物游离酸(MHA-FA)对幼建鲤生长性能、消化吸收酶活性和抗氧化指标的影响。选择平均体重为(8.24±0.03)g的健康幼建鲤300尾,随机分成2组,每组3个重复,每个重复50尾,分别饲喂等硫的DL-Met和MHA-FA的实用日粮,试验期60 d。结果表明:MHA-FA组的增重、饲料转化率以及蛋白质、脂肪和灰分的沉积率与DL-Met组差异不显著(P>0.05),但摄食量显著低于DL-Met组(P<0.05)。MHA-FA组的肌肉和肝胰脏中谷草转氨酶(GOT)和谷丙转氨酶(GPT)活力以及血浆氨含量与DL-Met组差异不显著(P>0.05)。MHA-FA组的肝胰脏和肠道胰蛋白酶、糜蛋白酶以及肠道脂肪酶和淀粉酶活力与DL-Met组均差异不显著(P>0.05),但肝胰脏脂肪酶和淀粉酶活力显著低于DL-Met组(P<0.05)。MHA-FA组的前肠和中肠碱性磷酸酶(AKP)、各肠段Na⁺, K⁺-ATP酶、中肠γ-谷氨酰转肽酶(γ-GT)以及全肠肌酸激酶(CK)活力与DL-Met组均差异不显著(P>0.05),但后肠AKP、前肠和后肠γ-GT活力显著低于DL-Met组(P<0.05)。与DL-Met组相比,MHA-FA组的血清、肠道和肝胰脏丙二醛(MDA)含量显著升高(P<0.05),血清谷胱甘肽(GSH)、血清和肠道过氧化氢酶(CAT)、肠道和肝胰脏谷胱甘肽硫转移酶(GST)、谷胱甘肽过氧化物酶(GSH-Px)活力显著降低(P<0.05)。综上所述,幼建鲤基础日粮中等硫添加MHA-FA基本可以达到与DL-Met相同的饲喂效果。

关键词:

Abstract: The purpose of this study was to study the effects of equal-sulfur DL-methionine (DL-Met) and methionine hydroxy analogue free acid (MHA-FA) supplementation in diets on growth performance, activities of digestive and absorptive enzymes and antioxidation indices of juvenile Jian carp (*Cyprinus carpio* var. Jian). A total of 450 fish with average initial weight of (8.24±0.03) g were randomly divided into 2 groups with 3 replicates in each group and 10 fish per replicate. The fish of two groups were fed practical diets supplemented with DL-Met and MHA-FA on equal-sulfur basis, respectively. The trial lasted for 60 days. The results showed as follows: MHA-FA and DL-Met had the same effects on weight gain, feed conversion ratio, productive values of protein, fat and ash in juvenile Jian carp (P>0.05), but the feed intake in MHA-FA group was significantly lower than that in DL-Met group (P<0.05). Glutamate-oxaloacetate transaminase (GOT) and glutamate-pyruvate transaminase (GPT) activities in muscle and hepatopancreas and plasma ammonia content also had no significantly difference between MHA-FA and DL-Met groups (P>0.05). The activities of trypsin and amylase in intestine and hepatopancreas, lipase and amylase in intestine were not significant different between MHA-FA and DL-Met groups (P>0.05), while the activities of lipase and amylase in hepatopancreas in MHA-FA group were significantly lower than those in DL-Met group (P>0.05). The activities of alkaline phosphatase (AKP) in foregut and midgut, Na⁺,K⁺-ATPase in foregut, midgut and hindgut, γ-glutamyl transpeptidase (γ-GT) in midgut and creatinekinase (CK) in whole intestine were not significantly different between MHA-FA and DL-Met groups (P>0.05). However, the activities of AKP in hindgut, γ-GT in foregut and hindgut in MHA-FA group were significantly lower than those in DL-Met group (P<0.05). Compared with the DL-Met group, the content of MDA in serum, intestine and hepatopancreas in MHA-FA group was significantly higher (P<0.05), while the activities of glutathione (GSH) in serum, catalase (CAT) in serum and intestine, glutathione S-transferase (GST), glutathione peroxidase (GSH-Px) in intestine and hepatopancreas in MHA-FA group were significantly lower (P<0.05). In conclusion, supplementation of MHA-FA and DL-Met on equal-

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sulfur basis in juvenile Jian carp diet nearly obtained the same feeding effects. [Chinese Journal of Animal Nutrition, 2010, 22 (4) :1122-1130]

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. A Comparative Study of Feeding Effects of Equal-sulfur Supplementation with DL-methionine and Methionine Hydroxy Analogue Free Acid in Juvenile Jian Carp (*Cyprinus carpio* var. Jian)[J]. Chinese Journal of Animal Nutrition, 2010,V22(04): 1122-1130.

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