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玉米干酒糟及其可溶物饲粮中添加共轭亚油酸或甜菜碱对肥育猪生长性能、血清生化指标及抗氧化功能的影响

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Effects of Corn DDGS Diets Supplemented with Conjugated Linoleic Acid or Betaine o Growth Performance, Serum Biochemical Indices and Antioxidant Function of Finishi Pigs

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摘要 本试验旨在研究在玉米干酒糟及其可溶物(DDGS)饲粮中添加共轭亚油酸(CLA)或甜菜碱(BET)对肥育猪生长性能、血清生化指标及抗氧化功能的影响。选用(60±2) kg"杜×长×大"三元杂交猪32头,随机分为4个处理,每个处理8个重复,每个重复1头猪。Ⅰ组为对照组,饲喂玉米-豆粕型基础饲粮;Ⅱ组在Ⅰ组的基础上用30%的玉米DDGS替代豆粕和部分玉米;Ⅲ、Ⅳ组在Ⅱ组的基础上分别添加1%的CLA和0.1%的BET。试验期42 d。结果表明:1)各组间生长性能差异不显著(*P*>0.05)。2)血清生化指标方面,与Ⅰ组相比,Ⅱ组总蛋白(TP)含量以及谷丙转氨酶(ALT)活性显著降低(*P*<0.05),Ⅳ组胆固醇(CHO)含量显著下降(*P*<0.05)。与Ⅱ组相比,Ⅳ组葡萄糖(GLU)含量显著升高(*P*<0.05)。3)血清抗氧化指标方面,与Ⅰ组相比,Ⅱ组丙二醛(MDA)含量显著升高(*P*<0.05)。与Ⅱ组相比,Ⅲ组MDA含量显著降低(*P*<0.05),总超氧化物歧化酶(T-SOD)、谷胱甘肽过氧化物酶(GSH-Px)活性以及总抗氧化能力(T-AOC)均显著升高(*P*<0.05);Ⅳ组T-SOD以及GSH-Px活性显著升高(*P*<0.05)。4)肌肉抗氧化指标方面,与Ⅰ组相比,Ⅱ组MDA含量显著升高(*P*<0.05)。与Ⅱ组相比,Ⅲ、Ⅳ组MDA含量显著下降(*P*<0.05),同时T-AOC显著升高(*P*<0.05)。综上所述,在肥育猪饲粮中添加30%的玉米DDGS对其生长性能无显著影响,但机体抗氧化能力有所降低;而在玉米DDGS饲粮中添加1%的CLA或0.1%的BET后,机体抗氧化能力在一定程度上得到了改善。

关键词: 玉米DDGS 肥育猪 共轭亚油酸 甜菜碱 生长性能 血清生化指标 抗氧化功能

Abstract: This experiment was conducted to study the effects of corn distillers dried grains with solubles (DDGS) diets supplemented with conjugated linoleic acid (CLA) or betaine (BET) on growth performance, serum biochemical indices and antioxidant function of finishing pigs. Thirty-two crossed-bred pigs (Duroc×Landrace×Yorkshine) with an average body weight of (60±2) kg were randomly allotted into 4 treatments with 8 replicates per treatment and 1 pig per replicate. Pigs in group Ⅰ (control group) were fed a corn-soybean basal diet, group Ⅱ diet was used 30% corn DDGS to replace soybean and corn, and groups Ⅲ, Ⅳ were fed the corn DDGS diets supplemented with 1% CLA or 0.1% BET, respectively. The trial lasted for 42 days. The results showed as follows: 1) there was no significant difference in growth performance among all groups (*P*>0.05). 2) Serum biochemical indices: compared with group Ⅰ, the total protein (TP) content and alanine aminotransferase (ALT) activity of group Ⅱ were decreased significantly (*P*<0.05),and cholesterol (CHO) content of group Ⅳ was decreased significantly (*P*<0.05). Compared with group Ⅱ, glucose (GLU) content of group Ⅳ was increased significantly (*P*<0.05). 3) Serum antioxidant indices: compared with group Ⅰ, malondialdehyde (MDA) content of group Ⅱ was increased significantly (*P*<0.05). Compared with group Ⅱ, MDA content of group Ⅲ was decreased significantly (*P*<0.05), and the activities of total superoxide dismutase (T-SOD), glutathione peroxidase (GSH-Px) of groups Ⅲ, Ⅳ and total antioxidant capacity (T-AOC) of group Ⅲ were increased significantly (*P*<0.05). 4) Muscle antioxidant indices: compared with group Ⅰ, MDA content of group Ⅱ was increased significantly (*P*<0.05). Compared with group Ⅱ, MDA content of groups Ⅲ, Ⅳ was decreased significantly and T-AOC content was increased significantly (*P*<0.05). It is concluded that diets supplemented with 30% corn DDGS has no significant effects on growth performance of finishing pigs, while the antioxidant capability is decreased. Supplemented with 1% CLA or 0.1% BET in the corn DDGS diet can improve antioxidant capability to a certain extent.

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Keywords： corn DDGS， finishing pigs， conjugated linoleic acid， betaine， growth performance， serum biochemical indices， antioxidant function

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