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益生菌、木聚糖酶和淀粉酶对朗德鹅产肝性能、脂肪沉积及血清生化指标的影响

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Effects of Probiotics, Xylanase and Amylase on Fatty Liver Performance, Fat Deposition and Serum Biochemical Indices of Landes Geese

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摘要 为了研究益生菌、木聚糖酶和淀粉酶对朗德鹅产肝性能、脂肪沉积、内脏器官及血液生化指标的影响,试验选取32只平均体重为(3.43±0.10) kg的健康朗德母鹅,随机分为4个组,每组8个重复,每个重复1只鹅。对照组朗德鹅填喂基础饲料,木聚糖酶组、益生菌组和淀粉酶组朗德鹅的饲料是在基础饲料中分别添加100 g/t木聚糖酶、4 000 g/t益生菌、200 g/t淀粉酶,填饲期共23 d。结果表明:1)木聚糖酶组、益生菌组、淀粉酶组朗德鹅的肥肝重分别比对照组提高了4.96% (P>0.05)、13.08% (P<0.05)、2.88% (P>0.05);料肝比分别比对照组降低了6.86% (P>0.05)、15.75% (P>0.05)和6.24% (P>0.05)。2)各添加剂组朗德鹅的腹脂重、肠脂重、皮下脂肪厚均高于对照组,其中益生菌组的腹脂重、肠脂重显著高于对照组 (P<0.05)。3)各添加剂组朗德鹅的法氏囊指数、脾脏指数均高于对照组,其中在脾脏指数方面达到了显著水平 (P<0.05);各添加剂组朗德鹅的腺肌胃指数相对于对照组均有降低的趋势 (P>0.05),此外,益生菌组的胰腺指数显著低于其他各组 (P<0.05)。4)益生菌组的血清葡萄糖含量最高,甘油三酯和总胆固醇含量最低,而木聚糖酶组和淀粉酶组的血清葡萄糖、甘油三酯和总胆固醇含量均高于对照组 (P>0.05);益生菌组的血清总蛋白、白蛋白、尿素氮和尿酸的含量及谷草转氨酶和谷丙转氨酶的活性均显著低于对照组 (P<0.05)。可见,添加木聚糖酶、益生菌和淀粉酶均能不同程度地提高朗德鹅的产肝性能,促进脂肪代谢,改善机体的消化和免疫状况,其中益生菌的添加效果显著。

关键词:

Abstract: This experiment was conducted to study the effects of probiotics, xylanase and amylase on fatty liver performance, fat deposition, internal organs and serum biochemical indices of Landes geese. Thirty-two healthy Landes geese [female, (3.43±0.10) kg] were selected and randomly divided into four groups with eight replicates in each group and one goose in each replicate.

Landes geese in the control group were fed with the basal diet. Landes geese in xylanase group, probiotics group and amylase group were fed with the diets supplemented with 100 g xylanase, 4 000 g probiotics and 200 g amylase per ton in the basal diet, respectively. The force-feeding experiment lasted for 23 days. The results showed as follows: 1) compared with the control group, the fatty liver weight of Landes geese in xylanase group, probiotics group and amylase group was increased by 4.96% (P>0.05), 13.08% (P<0.05) and 2.88% (P>0.05), respectively; the ratio of feed to liver weight was reduced by 6.86% (P>0.05), 15.75% (P>0.05) and 6.24% (P>0.05), respectively. 2) The abdominal fat weight, intestinal fat weight and subcutaneous fat thickness of Landes geese in xylanase group, probiotics group and amylase group were higher than those in the control group, of which the abdominal fat weight and intestinal fat weight in probiotics group were significantly higher than those in the control group (P<0.05). 3) The bursa of Fabricius index and spleen index of Landes geese in xylanase group, probiotics group and amylase group were higher than those in the control group, of which the spleen index was significantly higher than that in the control group (P<0.05); but the proventriculus and gizzard index had the tendency to decrease compared with the control group (P>0.05); in addition, the pancreas index of Landes geese in probiotics group was significantly lower than that in the other groups (P<0.05). 4) The serum glucose content of Landes geese in probiotics group was the highest, and the triglyceride and total cholesterol contents were the lowest;

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however, the serum glucose, triglyceride and total cholesterol contents in xylanase group and amylase group were higher than those in the control group ($P>0.05$); the serum total protein, albumin, urea nitrogen and uric acid contents and the activities of aspartate aminotransferase and alanine aminotransferase of Landes geese in probiotics group were significantly lower than those in the control group ($P<0.05$). Therefore, adding xylanase, probiotics and amylase into the diets is effective on improving fatty liver performance, fat deposition, digestive and immune status of Landes geese by different degrees, in which probiotics has a significant effect. [Chinese Journal of Animal Nutrition, 2010, 22 (6) :1665-1671]

Keywords:

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