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饲料粗蛋白质与外源褪黑激素水平对水貂生长性能、血清生化指标及营养物质消化率的影响

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Effects of Dietary Protein and Exogenous Melatonin Levels on Growth Performance, Serum Biochemical Parameters and Nutrient Digestibility of Minks (*Mustela vison*)

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摘要 本试验旨在研究饲料粗蛋白质(CP)和外源褪黑激素(MT)水平对水貂生长性能、血清生化指标及营养物质消化率的影响。选取90只50日龄体重一致的健康雄性水貂,随机分为6组,每组15个重复,每个重复1只水貂。采用3×2两因子试验设计,即3个饲料CP水平(32%、36%和40%)和2个皮下埋植的外源MT水平(0、10 mg/只)。试验期64 d。结果表明:1)40%CP水平时,10 mg/只MT组水貂末重显著高于0 mg/只MT组($P<0.05$);32%CP水平时,10 mg/只MT组水貂平均日增重显著高于0 mg/只MT组($P<0.05$);饲料CP和外源MT水平对水貂末重、平均日增重无显著交互效应($P>0.05$)。2)32%和40%CP水平时,皮下埋植10 mg/只MT可极显著降低水貂血清白蛋白(ALB)含量($P<0.01$);32%CP水平的血清甘油三酯(TG)含量均显著高于40%CP水平($P<0.05$);饲料CP和外源MT水平对水貂血清ALB含量存在极显著交互效应($P<0.01$),对血清总蛋白(TP)、尿素氮(UN)、TG含量和碱性磷酸酶(ALP)活性无显著交互效应($P>0.05$)。3)10 mg/只MT组中,32%和36%CP水平的水貂干物质采食量极显著高于40%CP水平($P<0.01$);0 mg/只MT组水貂中,32%CP水平的干物质采食量和干物质排出量极显著高于40%CP水平($P<0.01$);饲料CP和外源MT水平对水貂采食量、干物质采食量、干物质排出量和干物质消化率均无显著交互效应($P>0.05$)。4)10 mg/只MT组中,36%CP水平的水貂粗脂肪消化率显著高于32%和40%CP水平($P<0.05$),32%CP水平的水貂钙消化率极显著高于40%CP水平($P<0.01$),32%CP水平的水貂磷消化率极显著高于36%和40%CP水平($P<0.01$);0 mg/只MT组中,36%CP水平钙消化率极显著高于40%CP水平($P<0.01$),32%CP水平的水貂磷消化率极显著高于36%和40%CP水平($P<0.01$);饲料CP和外源MT水平对水貂CP、粗脂肪、钙和磷的消化率无显著交互效应($P>0.05$)。综合本试验各项测定指标可以得出,皮下埋植10 mg/只外源MT时,水貂较适宜的饲料CP水平为32%~36%。

关键词: 水貂 粗蛋白质 褪黑激素 生长性能 血清生化指标 营养物质消化率

Abstract: This experiment was conducted to study the effects of dietary crude protein (CP) and exogenous melatonin (MT) levels on growth performance, serum biochemical parameters and nutrient digestibility of minks. Ninety healthy fifty-day-old male minks with a similar body weight were randomly divided into 6 groups with 15 replicates per group and 1 mink per replicate. The trial was carried out using three dietary CP levels (32%, 36% and 40%) and two subcutaneous implant exogenous MT levels (0 and 10 mg per mink) in a 3×2 factorial design. The trial lasted for 64 days. The results showed as follows: 1) the final weight of minks fed diets with 40% CP level in 10 mg MT group was significantly higher than that in 0 mg MT group ($P<0.05$), and the average daily gain (ADG) of minks fed diets with 40% CP level in 10 mg MT group was significantly higher than that in 0 mg MT group ($P<0.05$). There was no significant interaction between dietary CP and exogenous MT levels in the final weight and ADG ($P>0.05$). 2) The serum albumin (ALB) content of minks fed diets with 32% and 40% CP levels in 10 mg MT group was significantly lower than that in 0 mg MT groups ($P<0.01$); the serum triglyceride (TG) content of minks fed diets with 32% and 36% CP levels was significantly higher than those minks fed diets with of 40% CP level ($P<0.05$). There was significant interaction between dietary CP and exogenous MT levels in the serum ALB content ($P<0.01$), but there was no significant interaction between dietary CP and exogenous MT levels in the serum total protein (TP), urea nitrogen (UN), TG content and alkaline phosphatase (ALP) activity ($P>0.05$). 3) For 10 mg MT groups, the dry matter (DM) intake of minks fed diets with 32% and 36% CP levels was significantly higher than that of minks fed diets with 40% CP level ($P<0.01$). For 0 mg MT groups, the DM intake and excretion of minks fed diets with 32% CP level were significantly higher than that of minks fed diets with 40% CP level ($P<0.01$). There was no significant

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Interaction between dietary CP and exogenous MT levels in the feed intake, DM intake, DM output and DM digestibility ($P>0.05$). 4) For 10 mg MT groups, the ether extract (EE) digestibility of minks fed diets with 36% CP level was significantly higher than that of minks fed diets with 32% and 40% CP levels ($P<0.05$), the calcium (Ca) digestibility of minks fed diets with 32% CP level was significantly higher than that of minks fed diets with 40% CP level ($P<0.01$), and the phosphonium (P) digestibility of minks fed diets with 32% CP level was significantly higher than that of minks fed diets with 36% and 40% CP levels ($P<0.01$). For 0 mg MT groups, the Ca digestibility of minks fed diets with 36% CP level was significantly higher than that of minks fed diets with 40% CP level ($P<0.01$), and the P digestibility of minks fed diets with 32% CP level was significantly higher than that of minks fed diets with 36% and 40% CP levels ($P<0.01$). There was no significant interaction between dietary CP and exogenous MT levels in the digestibility of CP, EE, Ca and P ($P>0.05$). Considering all factors, dietary 32% to 36% CP level is considered to be optimal for minks with 10 mg exogenous MT implantation.

Keywords: [mink](#), [crude protein](#), [melatonin](#), [growth performance](#), [serum biochemical parameters](#), [nutrient digestibility](#)

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