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## 白三叶对肉兔肠黏膜形态、肠道消化酶活性和盲肠发酵的影响

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## Effects of White Clover on Intestinal Mucosal Morphology, Intestinal Digestive Enzyme Activity and Caecum Fermentation of Meat Rabbits

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**摘要** 本试验旨在研究饲料中添加不同比例白三叶对肉兔肠黏膜形态、肠道消化酶活性和盲肠发酵的影响。试验选取体重相近的(35±2)日龄新西兰兔200只,随机分成5组,每组4个重复,每个重复10只。对照组饲喂不添加白三叶的基础饲料,试验组分别饲喂添加10%、20%、30%、40%白三叶的试验饲料,试验期35 d。结果表明:1)白三叶能够显著影响空肠的绒毛高度、隐窝深度、黏膜厚度、绒毛高度/隐窝深度以及盲肠隐窝深度( $P<0.05$ ),以20%白三叶组的空肠绒毛长度、黏膜厚度和绒毛高度/隐窝深度最大,但对盲肠黏膜厚度的影响不显著( $P>0.05$ )。2)白三叶能够显著影响淀粉酶和纤维素酶的活性( $P<0.05$ ),以40%白三叶组的淀粉酶活性和纤维素酶活性最高,但对脂肪酶活性的影响不显著( $P>0.05$ )。3)随着白三叶添加量的增加,盲肠pH、乙酸比例和乙酸/(丙酸+丁酸)显著上升( $P<0.05$ ),丙酸比例和丁酸比例则显著下降( $P<0.05$ ),白三叶对盲肠氨态氮、总挥发性脂肪酸、盲肠重和盲肠比的影响不显著( $P>0.05$ )。由此可见,白三叶能够影响肉兔的肠黏膜形态、主要消化酶的活性以及盲肠发酵。

**关键词:** 白三叶 肉兔 肠黏膜形态 消化酶 盲肠发酵

**Abstract:** This experiment was conducted to evaluate the effects of dietary white clover on intestinal mucosal morphology, intestinal digestive enzyme activity and caecum fermentation of meat rabbits. A total of 200 New Zealand rabbits weaned at (35±2) days of age with the similar body weight were randomly allotted into 5 groups with 4 replicates per group and 10 rabbits per replicate. The rabbits in control group were fed a basal diet without white clover, while the others in experimental groups were fed the basal diets supplemented with 10%, 20%, 30% and 40% white clover, respectively. The experiment lasted for 35 days. The results showed as follows: 1) white clover had significant influences on the villus height, crypt depth, mucosal thickness and villus height/crypt depth of jejunum and crypt depth of caecum ( $P<0.05$ ), and the villus height, mucosal thickness and villus height/crypt depth of jejunum got the maximum in 20% white clover group. White clover had no significant influence on the mucosal thickness of caecum ( $P>0.05$ ). 2) White clover had significant influences on the amylase and cellulase activities ( $P<0.05$ ), and the amylase and cellulase activities got the maximum in 40% white clover group. White clover had no significant influence on the lipase activity ( $P>0.05$ ). 3) The pH of caecum, acetic acid ratio and acetic acid/(propionic acid+butyric acid) were significantly raised when dietary white clover increased ( $P<0.05$ ), but the propionic acid ratio and butyric acid ratio were significantly dropped when dietary white clover increased ( $P<0.05$ ). White clover had no significant influences on the contents of ammonia nitrogen and total volatile fatty acid, caecum weight and caecum rate ( $P>0.05$ ). The results indicate that white clover has significant influences on intestinal mucosal morphology, main digestive enzyme activity and caecum fermentation.

**Keywords:** white clover, meat rabbit, intestinal mucosal morphology, digestive enzyme, caecum fermentation

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