

商用飼糧中添加高粱酒糟對臺灣黑羽土雞 生長性狀與抗氧化性之影響

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摘 要

本試驗係以添加乾燥高粱酒糟(SDR)於商用土雞飼糧之方式來探討 SDR 對臺灣黑羽土雞生長性狀與組織抗氧化酵素濃度之影響。選取 168 隻臺灣黑羽土雞分成 3 組，分別飼予添加 0%、15% 與 30% 乾燥 SDR 之商用土雞飼糧，試驗期為 8 週，每 2 週進行稱重，並於雞隻 9 與 13 週齡時採血與犧牲採樣以分析組織中過氧化氫 (H₂O₂) 含量及超氧歧化酶 (superoxide dismutase, SOD)、觸酶 (catalase, CAT) 與麩胱甘肽過氧化酶 (glutathione peroxidase, GPX) 等抗氧化酵素活性。結果顯示，於試驗結束 (13 週齡)，各處理組雞隻活體重並無顯著差異，除在 10-11 週齡之外，各生長階段以雞隻採食 30%SDR 處理組之飼料效率顯著降低 (P < 0.05)。在抗氧化系統方面，試驗數據顯示雞隻在 13 週齡時 CAT 活性在血漿和腦在 15%和 30%SDR 組均顯著高於對照組，而在 9 週齡時兩個 SDR 組的 CAT 活性在腦也顯著增加，但這種現象不發現在肝臟。對於 SOD 活性，在肝臟中檢測到 30%SDR 組在 9 週齡和 13 週齡都顯著增加，但其他組沒有發現明顯變化。對於 GPX 活性，則各組無明顯變化。至於 H₂O₂ 的含量，意外發現 30%SDR 組在 13 週齡雞隻大腦中的顯著增加，但在肝臟中檢測到 15%和 30%SDR 組在 13 週齡顯著降低。綜合上述，添加 SDR 於土雞飼糧，對臺灣黑羽土雞不同組織之抗氧化能力則有不同程度地提升的效果，而且 SDR 添加量達到 30% 也不影響土雞生長性狀。

關鍵詞：高粱酒糟、抗氧化性、生理組織、雞

The Effect of Sorghum Distillery Residue Food Additive on Growth Characteristics and Antioxidant Ability in Taiwan Black Feather Native Chickens

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Abstract

The present study is to investigate the effect of sorghum distillery residue (SDR) on the growth characteristics of chickens and levels of antioxidant enzymes in various tissues. One hundred and sixty-eight male 5 week-old Taiwan black feather native chickens were divided into 3 groups and fed 0, 15 and 30% SDR mixed into a commercial diet for 8 weeks. The chickens were weighed every two weeks and twenty-eight chickens from each group were sacrificed at week 9 and 13 to test H₂O₂ content and the activities of superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPX). The results showed that there was no significant difference in the body weight and average daily weight gain of chickens among all groups during the experimental period. Feed efficiency in chickens fed with 30% SDR was significantly lower than that with 0% SDR for the majority of the feeding period ($P < 0.05$). In the antioxidant system, the data shows that CAT activity in blood plasma and brain in 15% and 30% SDR groups were significantly higher than that of the control group at 13 weeks of age, with the brain exhibiting a CAT activity increase at 9 weeks of age in both SDR groups, but not in the liver. For SOD activity, significant increase was detected in the liver in the 30% SDR group at 9 weeks of age and 13 weeks of age, but no significant change was detected elsewhere. For GPX activity, no significant change was detected. On H₂O₂ levels, significant increase was unexpectedly detected in the brain in the 30% SDR group at 13 weeks of age, but significant decrease was detected in the liver in 15% and 30% SDR groups at 13 weeks of age. Above all, the data indicated that SDR may affect the activities of antioxidant enzymes in various tissues in the Taiwan black feather native chickens, and overall there is no significant effect on growth performance when Taiwan black feather native chickens are fed diets containing up to 30% SDR.

Key words: Dehydrated sorghum distillery residue, Antioxidant ability, Physiological tissues, Chickens