The effect of Thyme extract in low protein diet on ileal nutrients digestibility and intestinal morphometry of broiler chickens

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Abstract
To evaluate whether Thymus kotschyanus, a local herb, extract could affect on growth performance, intestinal morphometry and ileal nutrients digestibility of broilers on low protein diet, the study was carried out by employing a completely randomized design with a factorial arrangement of 2×3. A total of 384 day old Ross 308 broiler chicks were assigned to a commercial or a low protein diet (10% lower than required level) supplemented with 0, 0.05 or 0.15% of the extract. During the starter period (0-21d), the birds fed low protein diet had lower feed intake (FI) and higher weight gain (WG) (P<0.001), while those fed the diet supplemented with 0.05% extract had improved WG and feed conversion rate (FCR) (P<0.05). Supplementation of low protein diet with 0.05% extract improved WG and FCR of the chickens (P<0.05). Increased FI and no effect on WG and FCR by low protein diet (P<0.05) as well as adverse effect on performance of birds by adding extract to the diet were detected at finisher (21-42d) and entire feeding periods (0-42d). Low protein diet and adding 0.05% extract to the diets declined villus height and crypt depth and increased thickness of muscular layer of jejunum (P<0.05). The highest villus surface area (P<0.05) and the deepest crypts (P<0.001) were observed by recommended protein diet supplemented with 0.05% extract, while the thickest muscle layer of jejunum was detected by low protein diet supplemented by 0.15% extract (P<0.01). Relative weight of breast increased by adding either 0.05% or 0.15% extract to the diet (P<0.05). Ileal digestibility of protein and ash decreased by low protein diet (P≤0.05) and increased by 0.15% extract supplementation to the diets (P<0.05). It can be concluded that the effect of Thymus kotschyanus extract in broiler’s diet depends on bird’s age and the extract level. The beneficial effect on bird performance was only detected at starter period and low level of total Cholesterol was observed by the extract supplementation. Furthermore, decreasing protein level of diet to 10% has no adverse effect on growth performance of the birds.

Key words: Thyme extract, low protein, nutrients digestibility, morphometry, broiler chickens

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