



## Adding thymol to a broiler diet influences in vitro cecal fermentation and in vivo growth performances

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(2004) Proceeding of ADSA-ASAS Joint Meeting; p.325. July, 26-29, Saint Louis, MO

Thymol and other essential oils have antimicrobial properties and may be considered among the alternatives to antibiotic growth promoters. We evaluated the effect of thymol in broiler in vitro cecal fermentations and broiler growth performances. In the in vitro study, broiler cecal inoculum was incubated for 24h in graduated syringes and vessels containing a standard predigested diet without or with thymol at 75, 150, 300, 600, 900, or 1200 ppm. Compared to control, total gas production was reduced by thymol at every concentration ( $P < 0.01$ ), being almost completely inhibited by thymol at 900 and 1200 ppm. The rate of gas production was reduced only when thymol was used at 900 and 1200 ppm ( $P < 0.01$ ). Ammonia concentration was lower than in control vessels ( $P < 0.01$ ) at 4 h when thymol was used at 1200 ppm (-27%) and at 8 h with thymol at 600 (-20%), 900 (-25%), and 1200 ppm (-21%); at 24 h, thymol at 150 (+29%), 300 (+28%), and 900 ppm (+33%) resulted in higher ammonia than control ( $P < 0.01$ ). In the in vivo trial, 2160 female broilers (Ross 508) were divided immediately after birth into 4 groups (9 cages of 60 birds per group) and received a commercial diet with or without (control) the addition of thymol at 300, 600, or 900 ppm. Birds were fed ad libitum until the slaughtering age (39 d). Compared to control, the final live weight was higher when thymol was fed at 600 ppm (+2%) but lower when thymol was added at 300 (-5%) and 900 ppm (-2%;  $P < 0.01$ ). Feed efficiency was lower in birds receiving thymol at 300 (-6%) and 900 ppm (-2%;  $P < 0.01$ ) than in control birds. Daily feed intake and dressing out percentage were not influenced by thymol dose. Thymol influenced in vitro cecal fermentation, reducing total gas production and controlling proteolysis in the first 8 h of fermentation. Thymol at 600 ppm enhanced birds growth. Nevertheless, thymol had a negative effect on broiler growth and feed to gain ratio when used at 300 and 900 ppm.

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