

Effects of dietary sodium diformate on broiler performance during the starter phase



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Introduction: Broiler growth rate and feed efficiency are key to their economic performance through to market. Nutrition plays a crucial role, particularly during the post-hatch period, since healthy gut development affects later performance. Organic acids and their salts have proved especially effective in maintaining growth performance. Previous studies on the antimicrobial impact of organic acids and their salts, including sodium diformate, placed less emphasis on the starter period. This formed the impetus for the trial.

Material and methods: The objective of this experiment was to evaluate the impact of dietary sodium diformate (traded as Formi NDF, ADDCON, hereafter referred to as NDF) in broiler starter diets until day 21, against both a negative and positive control containing an antibiotic growth promoter (AGP; Trimethoprim-sulpadiazine). A total of 180 one-day old male broilers (Ross 308) were randomly allocated to one of 3 treatment diets with 6 replicates of 10 birds each on a research farm in Iran. Experimental treatments were: negative control; AGP; and 1 kg/tonne NDF. Broiler starter diets were provided as mash feed *ad libitum*. Body weight, feed intake and FCR were recorded and analysed and a confidence level of 95% was defined; whereas ADG and EBI were calculated pooled. The European Broiler Index (EBI), based on the performance parameters weight gain, feed efficiency and mortality is calculated using the following equation:



$$\text{EBI} = \text{ADG [g]} \times \text{survival [\%]} / (10 \times \text{FCR})$$

Results and discussion: Growth performance results revealed a significant performance enhancing impact of the acidifier (Table 1). Dietary NDF improved body weight gain compared to both the control and AGP diets (10.9% and 4.4%, respectively; $P < 0.01$). Since feed intake was unaffected by diet, FCR was also improved significantly by NDF inclusion ($P < 0.05$) and varied between control (1.74) AGP (1.70) and NDF (1.56). This led to a considerably increased EBI in the NDF-fed group compared to negative control and AGP-fed broilers (23.4% and 13.7%, respectively).

Table 1: Performance parameters in broilers fed with or without sodium diformate (FORMI® NDF) till 21 days post hatch

	Negative control	Positive control	0.1% FORMI NDF
Feed intake [g]	891	923	888
Body weight gain [g]	514 ^a	546 ^a	570 ^b
Avg. Daily Gain [g/d]	24.5	26.0	27.1
FCR	1.74 ^a	1.70 ^{ab}	1.56 ^b
EBI	141	153	174

Means in a row not sharing the same superscript are significantly different ($P < 0.05$)

The results described are in full agreement with previously reported data, which also found a performance enhancing impact of the acidifier in the early life stage of the broiler. There, it was found that the use of 0.15% NDF till 14 days post-hatch led to a significant increase ($P < 0.05$) of the body weight, while the FCR was numerically improved by 3 percent. It can therefore be concluded that dietary sodium diformate, traded as Formi NDF, plays not only an important role in the nutrition of broilers till slaughter, but can ensure a healthy and optimized performance in the starter period of chicken when gut health is at stake, without the use of prophylactic in-feed antibiotics.