



The impact of dietary sodium diformate on broiler performance - a meta-analysis

Christian Lückstädt

ADDCON GmbH, 06749 Bitterfeld-Wolfen, Germany;
christian.lueckstaedt@addcon.com

Introduction:

Organic acids are considered one of the most promising tools for antibiotic reduction strategies, as in addition to their antimicrobial property, organic acids provide many extra benefits such as improving the intestinal health, optimising the intestinal pH and thereby improving nutrient digestibility. Formic acid is especially noteworthy for its antibacterial impact. An important limitation, however, is that organic acids, including formic acid, are rapidly metabolised in the foregut (crop to gizzard) of birds, which will reduce their impact on growth performance. As such, the use of a double sodium salt of formic acid has become more prevalent in poultry diets, as it has been proven to be effective against pathogenic bacteria along the whole gastro-intestinal tract. Dietary sodium diformate (Formi NDF, ADDCON – hereafter abbreviated as NDF) has been widely used in poultry production since more than 15 years and numerous publications and conference contributions on its use in broilers have been published.



Materials and methods:

This study analyzed the average impact from all documented broiler studies on the effect of the additive on the performance parameters weight gain, feed efficiency (FCR), mortality and productivity (European Broiler Index, EBI). The final dataset contained the results of 28 trials with NDF inclusion (0.1% - 0.6%), carried out world-wide. The total number of broilers in both scientific and commercial trials was more than 1.75 million. Results of the meta-analysis are expressed as percentage difference from the negative control. A $P < 0.05$ value was considered significant.

Results:

The average level of dietary NDF inclusion from the dataset was 0.23% (Tab. 1). Only a tendency of an increased feed intake (1.3%) was observed ($P < 0.1$). However, the performance of broilers based on daily weight gain was highly significantly increased by 4.6% ($P < 0.0001$). Furthermore, the FCR was also significantly improved (3.3% lower; $P < 0.001$). Survival was increased on average by 2.5% ($P = 0.01$). Consequently, the EBI also improved highly significantly due to the inclusion of Formi NDF by 11.1% ($P < 0.0001$).

Table 1: Meta-analysis of 28 trials with broilers, fed diets with sodium diformate (Formi NDF), expressed as an average percentage difference from negative control

Dosage	Feed intake	Weight gain	FCR	Survival	EBI
0.23%	+1.3	+4.6	-3.3	+2.5	+11.1
P-value	0.06	<0.0001	0.0003	0.01	<0.0001

Conclusion:

According to a substantial world-wide database, it is concluded that dietary sodium diformate (Formi NDF) is an effective and sustainable tool to enhance broiler performance under a wide range of production conditions.