

ADDCON OFFERS SCIENCE

New approach for poultry production

Performance enhancement with FORMI NDF in broiler till 42 days post-hatch

Evidence for the development of antibiotic resistant strains of bacteria that are pathogenic to humans has mounted over recent decades; and the practice of using sub-therapeutic levels of antibiotics as growth promoters (AGP) in livestock production has been heavily implicated in this resistance.

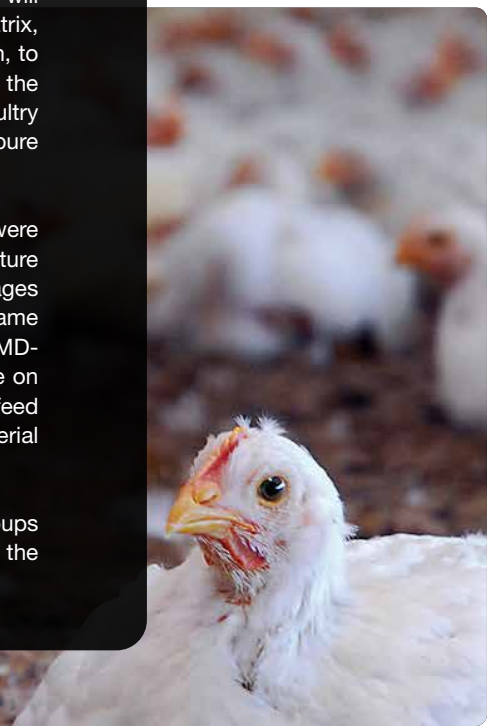
Worldwide, this connection has eroded consumer trust in agricultural practices that rely on this valuable medical resource and legislation is increasingly limiting their use. The shift from AGP to alternatives that began in Europe spread rapidly, as exporting countries have had no choice but to comply.

A number of alternative feed additives have been investigated. Among these compounds are acidifiers. These supplements include the organic acids and their salts, like diformates. Potassium diformate, for instance, the potassium double-salt of formic acid, rapidly gained formal approval as the first legal alternative to in-feed antibiotics in Europe.

Formic acid and its salts are well known to improve productivity. Acting against pathogens, they help to decrease pressure on the animal's immune system and thus, more nutrients will be available for productive functions such as growth or laying. Acting on the feed matrix, on the other hand, provides optimal conditions for digestive enzymes, particularly pepsin, to release more nutrients from the feed. The double sodium salt of formic acid, while having the same antimicrobial properties as formic acid, has become more commonly used in poultry production, as it is easier to handle and does not negatively affect palatability, as can the pure acid.

The benefits of incorporating sodium diformate (**FORMI NDF**, ADDCON) in broiler diets were demonstrated recently in a trial conducted at the research farm of the University of Agriculture and Forestry in Ho Chi Minh City, Vietnam. The acidifier was tested at two different dosages (1 or 3 kg sodium diformate per tonne of feed) in a commercial broiler diet, against the same diet containing either no acidifier (control group) or an antibiotic growth promoter (AGP: BMD-10 at 300g/t of feed). Feed and water were available ad libitum. The effects of diformate on performance parameters of poultry (livestock viability, live weight, feed consumption and feed conversion), on dressing (breast meat ratio), as well as litter quality (water content, bacterial load) were examined.

384 day old birds (Cobb 500) were randomly selected and divided into 4 treatment groups with 96 chicks each. The diets were fed for 42 days. Performance data were measured at the end of the trial (Tab. 1).



	Negative Control	NDF (1 kg/t)	NDF (3 kg/t)	AGP (300 g/t)
Number of birds	96	96	96	96
Final weight [kg]	2.264	2.324	2.365	2.345
Daily weight gain [g/d]	52.8	54.2	55.2	54.7
Daily feed intake [g/d]	109.4	103.1	107.8	110.6
FCR	2.07	1.90	1.95	2.02
Survival [%]	95.8	97.9	97.8	99.0
Breast ratio [%]	22.7	23.9	24.0	23.3
EBI	244	279	277	268
Cost of feed / 1kg gain*	0.72	0.66	0.69	0.71

*EBI = European Broiler Index: ADG (g) x survival % / (10x FCR); calculated in €

Overall performance in the groups with FORMI NDF was increased, even when compared to the AGP-group. The addition of 1 kg sodium diformate resulted in an increase of 2.6% in weight gain, while the feed conversion rate was improved by 8.2%, compared to the negative control. This NDF-inclusion was best according to the broiler index as well as being the most cost effective. Furthermore, birds fed with NDF had a numerical improvement when dressed. The breast meat ratio increased by more than 5% compared to the negative control, while the improvement compared the AGP-group was still nearly 3%. One could speculate that this was caused by the improved protein digestibility, which is often reported in conjunction with the use of a dietary acidifier.

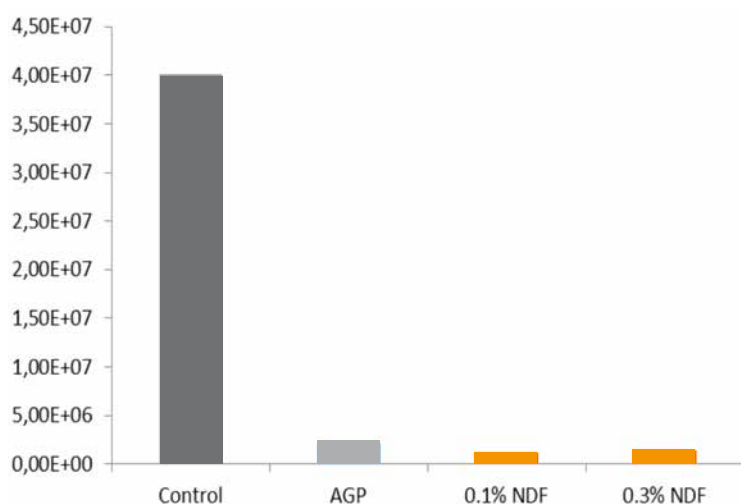


Figure 1: E.coli numbers (MPN/g) in faeces of broiler fed with or without FORMI NDF

Finally, the faecal quality and content of birds was examined. Litter quality, based on the moisture content, was significantly ($P < 0.05$) improved in birds fed NDF at both dosages (tested against the negative control). Moisture content in the faecal matter was reduced by either 7% (in the 0.1% NDF-dosage) or 5% (at 0.3% inclusion of the additive); while the AGP-group had only a reduction of 4% in the moisture content of faecal matter (moisture content of control litter was 57.2%). In conjunction with the improved quality of the litter is also the significantly reduced ($P < 0.05$) level of *E.coli* in the faeces (Fig. 1), which is measured as MPN (Most Probable Number). Looking at the reduction rate, it could be said that the use of dietary sodium diformate reduces the *E.coli* load in faeces by 96-97%!

Conclusions:

Numerous reports have demonstrated that including sodium diformate (FORMI NDF) in broiler diets has beneficial effects on performance by lowering bacterial pathogen load and improving nutrient digestibility. These benefits are turned into economic returns, despite the perceived increase in feed cost of using additives.

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