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The influence of drinking water acidification in broilers under Indonesian conditions

Christian Lückstädt*, Kevin Teh and Stevan Petrovic
ADDCON GmbH, 06749 Bitterfeld-Wolfen, Germany
*christian.lueckstaedt@addcon.com

Introduction:

Organic acids, and in particular formic acid and its salts, are well known to improve productivity in animal nutrition. By acting against pathogens, they help to decrease pressure on the animal's immune system, thus more nutrients will be available for productive functions such as growth. The use of acidifiers via the drinking water will therefore not only create hygienic conditions in the water itself but will also lead to improved performance parameters in poultry. This is especially needed during the rainy season, when conditions are severe, and mortality is rising.

Materials and methods:

A recent trial, conducted at a broiler farm under such conditions in Indonesia, tested drinking water acidification with a liquid acidifier consisting of formic acid and sodium formate (ADDCON XL2.0, ADDCON, Germany) at a dosage of 0.6 ml/1000 ml drinking water for 8 h a day from day 14 onwards till slaughter, against a negative control. 55,000 birds were randomly selected and divided equally into 2 groups with 27,500 broilers each. Feed and water were available ad libitum. The effects of the acidifier on performance (daily weight gain, feed conversion) as well as productivity index and mortality were examined at slaughter on day 35. The results are given as mean and a confidence level of 95% was defined for these analyses.

Results and discussion:

Although the water acidification was carried out for 3 weeks only, average daily weight gain and feed conversion were improved significantly ($P<0.05$) across the whole cycle (Table 1). Mortality, calculated from the start of the treatment till slaughter, tended to be reduced by almost 25% ($P<0.1$). The resulting overall productivity index of the broilers increased by 4.3% ($P=0.012$).

Table 1: Performance parameters of broilers with or without acidified drinking water (600 ml/L ADDCON XL2.0 for 8 h/d) from day 14 until slaughter at day 35

	Negative Control	Acidifier	P-level
Final weight (kg)	1973±47	2068±112	0.09
ADG (g/d)	60.8±1.7	61.7±2.1	0.04
FCR	1.47±0.01	1.44±0.02	0.02
Mortality (%)	2.7±0.9	2.0±0.4	0.09
PI*	398±11	415±7	0.01

*Productivity Index = ADG (g) × Survival rate (%) / (10 × FCR)

Conclusion:

It can therefore be concluded that drinking water acidification for broilers has beneficial effects on the performance of the birds and may be considered as a low-cost option to improve production parameters. Especially under tropical conditions, this could play a vital role in providing hygienic drinking water and reducing pathogen load, thus having enormous potential as an integral component of a successful biosecurity programme.