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Use of Drinking Water Acidification to Enhance Poultry Performance in Rural Thailand

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Abstract

Organic acids, 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. Furthermore, securing a low pH in the gizzard and proventriculus, may improve protein digestibility. Its use via the drinking water will therefore not only create hygienic conditions in the water itself, but also lead to improved performance parameters in the bird.

In a recent trial, conducted at a broiler farm in the Chonburi province, Thailand, drinking water acidification with a liquid acidifier consisting of formic acid and hexamethylenetetramine (ADDCON XL) was tested at two different dosage scenarios (1 ml/1000 ml for 7 h a day; 1 ml/1000 ml for 20 h a day – both dosages for the last 24 days before slaughter) against a negative control. 13,500 birds were randomly selected and divided equally into three treatment groups with 4,500 chicks each. Feed and water were available *ad libitum*. The effects of the acidifier on performance (daily weight gain, feed conversion) and mortality was examined after 42 days. The results are given as mean and a confidence level of 95 % was defined for these analyses.

Despite the short inclusion of the drinking water acidifier, average daily weight gain and feed conversion were improved significantly ($p < 0.05$). Mortality remained below 5 % in all groups without any differences between the groups. The European broiler index was highest in the group with 20 h access to the acidifier; however no statistical analysis is available for this parameter.

This study demonstrates that including water acidification in broiler production has beneficial effects on bird performance and may be considered as a low-cost option to improve production parameters in general.

Keywords: Broiler performance, formic acid, hexamine, water acidification