

# Effects of Ethacrynic Acid on Growth and Food Conversion Ratio in Chickens

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An excess of cations in the diet alleviates a lysine/arginine antagonism that occurs particularly when lysine is in excess. This may lead to an increase in growth and food conversion ratio in chickens and pigs (Austic and Calvert, 1981). To this end sodium or potassium bicarbonate is often added to diets to increase the cation/anion ratio. However, this may reduce peptic digestion due to the neutralisation of gastric acid.

Ethacrynic acid is a high ceiling loop diuretic that inhibits chloride reabsorption in the kidney tubules, leading to a cation excess and a metabolic alkalosis (Breyer and Jacobson, 1990). This drug induces a metabolic alkalosis without affecting gastric digestion.

The present study investigates the effects of ethacrynic acid on growth and food conversion ratio in chickens. Two diets (LL and NL) were formulated to provide 12.3 MJ/kg ME and to meet ARC (1975) guidelines. Diet LL and NL had lysine contents of 0.8% and 1.1% respectively. Ethacrynic acid was added to the diets at inclusion rates of 0, 2, 20 and 200mg/kg. Each diet/drug combination was fed to two replicates of 10 broiler chickens housed in a brooder. The food intake and growth rates were measured from days 5-30 and are shown in the following table.

Ethacrynic acid at 200 mg/kg increased the growth of birds and improved the food conversion ratio on both diets. The efficiency of food conversion was enhanced with the lower inclusion of 20mg/kg ethacrynic acid.

This drug has a potential role as a growth promoting agent. However, a substantial increase in water consumption and the water content of the faeces was noted with the higher doses of ethacrynic acid. This may limit its practical application to industry.

## References

- ARC (1975) *Nutrient Requirements of Poultry*.  
 Austic, R.E. and Calvert, C.C. (1981) *Fed. Proc.* 40: 63-67.  
 Breyer, J. and Jacobson, H.R. (1991) *Ann. Rev. Med.* 41: 265-275.

Ethacrynic Acid (mg/kg)	Average Daily Gain (g/d)		Food Conversion Ratio	
	Diet NL	Diet LL	Diet NL	Diet LL
0	42.1a	34.0a	1.68a	2.31a
2	41.6a	34.4a	1.57a	2.21ab
20	44.4a	35.3ab	1.51b	2.11b
200	47.0b	37.1b	1.51b	2.01bc

means with different subscripts in the same column are significantly different ( $P < 0.05$ ).