

Response of Broilers chickens to dietary Valine:Lysine ratio

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Introduction

Reducing dietary crude protein (CP) may reduce manure nitrogen, improve health and reduce feeding cost, thereby contributing to improvements in production sustainability. However, in order to maintain broiler performance when fed lower dietary CP, it is mandatory to know which indispensable amino acids become limiting and their requirements.

The objective of the current experiment was to study the response of growing and finishing broilers to dietary Val:Lys digestible ratio in term of growth performance.

Materials & methods

- 2200 male Cobb 500 chicks

- Fed during 2 phases :14-21 days and 22- 35 days

Dietary treatments:

- Corn, wheat, wheat middling and peanut meal based diet low in CP (16%) and Lys (0.87%)

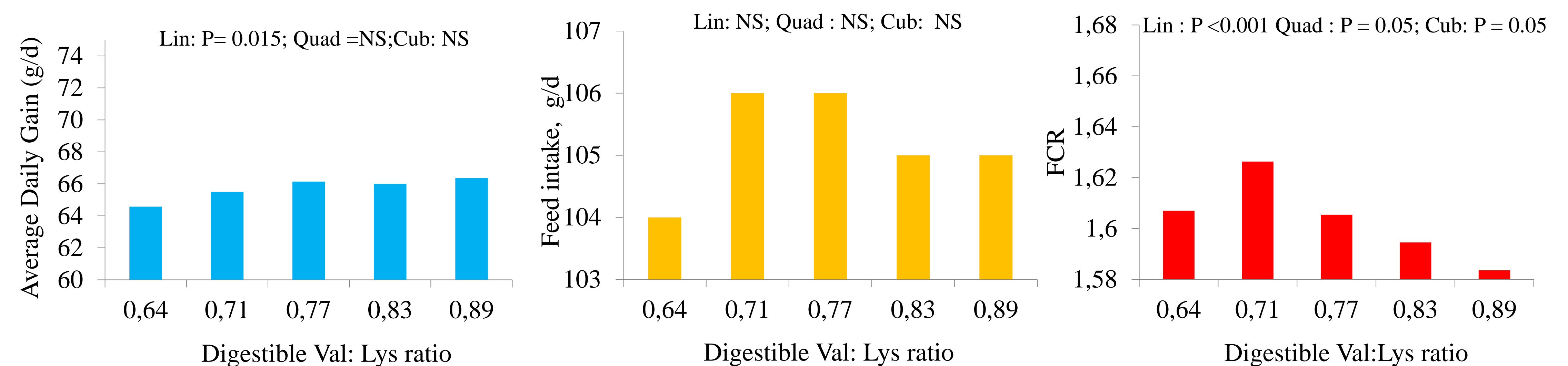
- 5 digestible Val:Lys: 0.64, 0.71, 0.77, 0.83 and 0.89

- Measurements : Growth performance

Period	Grower ¹		Finisher ²	
	Val:Lys, %	64.00	89.00	64.00
Item				
Corn	42.48	42.39	37.01	36.93
Wheat soft	20.00	19.95	20.00	19.95
Wheat shorts	10.00	9.98	15.00	14.97
Peanut Meal defatted	6.80	6.78	7.35	7.33
Soybean Meal 48%	6.12	6.11	0.00	0.00
Corn Gluten Feed	2.50	2.49	7.50	7.48
Full Fat Soya	2.50	2.49	1.80	1.80
Poultry Fat	1.81	1.81	3.50	3.49
Meat and Bone Meal (54% CP)	0.72	0.72	0.29	0.29
Dicalcium Phosphate²	1.24	1.24	0.44	0.44
Calcium Carbonate	1.14	1.14	0.75	0.75
L-Lysine	0.50	0.50	0.55	0.55
DL-Methionine	0.25	0.25	0.24	0.24
L-Threonine	0.17	0.17	0.19	0.19
L-Isoleucine	0.15	0.15	0.18	0.18
L-tryptophan	0.03	0.03	0.04	0.04
L-Valine	0.00	0.23	0.00	0.23
Glycine	0.16	0.16	0.02	0.02
Coccidiostat⁵	0.05	0.05	0.05	0.05
Microingredients³	3.38	3.38	2.41	2.41

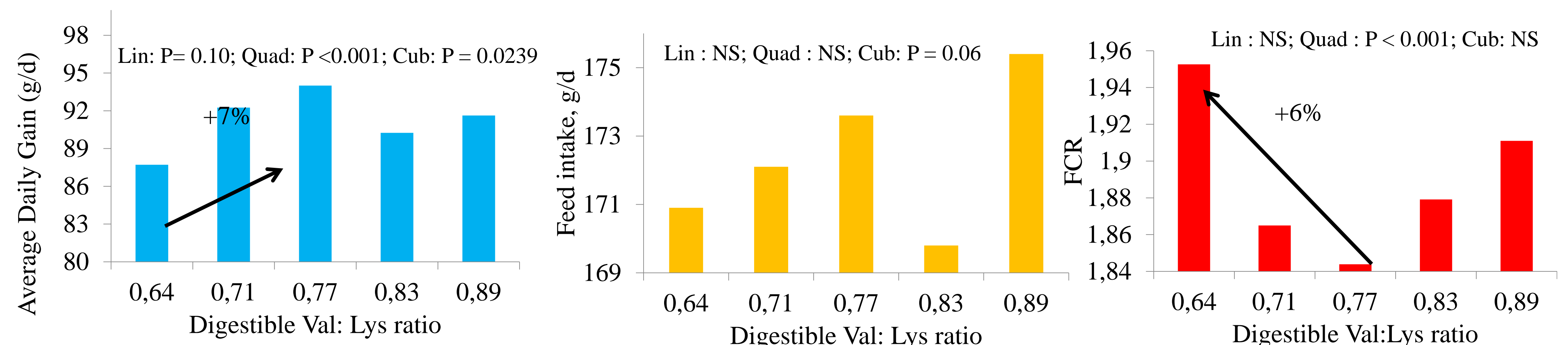
Results

14-21 days



The bird response to Val:Lys ratio is low and the feed intake is higher than expected.

22-35 days



Digestible Val:Lys positively influences ADG until 0.77 without affecting ADFI, resulting in improved FCR

Discussion and conclusion

Dietary CP levels were very low in the current experiment. The response of broilers to the Val:Lys ratio was low during the growing period while the feed intake was higher (20%) than expected. This is probably the result of the suboptimal CP level. Therefore, it appears that Val was either non limiting or not the limiting factor.

The response of broilers to the Val:Lys ratio was quadratic during the finishing phase and showed an increase ADG with Val addition from 0.64 to 0.77 without feed intake modification. Therefore, FCR was improved in bird fed the 0.71 and 0.77 diet.

The current experiment confirms the known difficulty to formulate low CP diet in broilers and that Val is not the only limiting factor in the current experiment.

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