

Physiological Responses Of Broiler Chickens Fed Native Gedi Leaves (*Abelmoschus manihot* (L.) Medik) At High Ambient Temperature

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Introduction

Dietary manipulation has been tried to lessen the effect of heat stress on productive performance of poultry, especially with plant origin in diet as active components fountain. Studies have shown that gedi leaves growing in Manado, North Sulawesi of Indonesia contained more steroid, total flavonoid quercetin equivalents, total phenolic, and also high crude protein, crude fiber, calcium and lysine (Mandey, 2013^{1,2}; Mandey et al., 2013; and Mandey et al., 2014). That compounds may show the ability to affect feed efficacy by modulate the gut ecosystem, because there was slightly information about the utilization of gedi leaves as broiler feedstuff. It have been reported that using high propolis rich in phenolics

and vitamin C could partially overcome the dejection in growth and carcass quality caused by heat stress in broilers (Seven et al., 2008). Broiler welfare, productive performance and immune response of broiler against disease improved by supplying broiler with anti-stress like dry peppermint and ginkgo biloba as management practices during summer (El Iraqi et al., 2013). Therefore, the objective of this research was evaluate the effects of gedi leaves on the physiological responses, specific growth rate and carcass traits of broiler chickens exposed to high ambient temperature.

Materials and Methods

A total of 100 unsexed broiler DOC (Cobb CP 707), average weight 44.94 ± 1.98 g with coefficient of variance 4,40% allocated to four dietary treatments with five replicate pens of 5 chicks each. The basal diet was fed as a control diet or supplemented with gedi leaves at three different levels (5, 10 and 15%). These diets were administered for a 35 days period. Ambient temperature ($^{\circ}\text{C}$) and relative humidity (%) inside experimental room were recorded daily throughout experimental period and average values were range 26.0 to 33.5 $^{\circ}\text{C}$ and 63 to 93%, respectively. Parameters were evaluated: body weight gain, feed intake, feed conversion ratio (FCR), specific growth rate (SGR), growth efficiency (GE) and carcass traits, and its carcass parameters (ready to cook) including dressing percentage and abdominal fat were determined.

Results and Discussion

The results showed there was no one case of mortality in this experiment. The effects of dietary gedi leaf exposed high ambient temperature on the physiological responses of broiler chickens during the entire trial period are given in Table 1. Our results found the decreasing of feed intake and weight gain, however, an improved feed conversion ratio and dressing percentage for gedi treatment compared to control. Degumming process of gedi before it was used, may enhance broiler performance for functional food under high ambient temperature.

Table 1. Performance, Specific Growth Rate and Carcass Traits During the Entire Trial Period for the Broiler Treatment Groups

Variables	Diets				Pvalue
	R0	R1	R2	R3	
ATFI (g/b) *	2708±35.33 ^d	2362±50.82 ^c	2044±73.46 ^b	1869±55.51 ^a	p<0.001
AFI (g/b/d) *	77.38±1.01 ^d	67.48±1.46 ^c	58.41±2.13 ^b	53.40±1.59 ^a	p<0.01
FCR (NU) *	1.56±0.05 ^a	1.86±0.13 ^{ab}	2.01±0.10 ^{bc}	2.29±0.41 ^c	p<0.01
Final wt, g *	1754.4±82.33	1354.5±39.99	1067.4±49.9	935.4±52.40	
Initial wt, g *	46.04±0.83	46.2±0.92	46.84±0.91	46.72±1.45	
SGR (%) g day ⁻¹	10.396±0.067 ^d	9.643±0.125 ^c	8.907±0.159 ^b	8.567±0.223 ^a	p<0.01
SGR Lean Mass (%)	9.657±0.042 ^d	8.811±0.282 ^c	8.137±0.307 ^b	7.676±0.439 ^a	p<0.01
GE	1.06±0.025	0.81±0.037	0.63±0.042	0.55±0.040	
Dressing % *	72.31±0.65 ^b	68.76±3.64 ^a	68.19±2.10 ^a	67.57±2.61 ^a	p<0.036
Abdominal Fat % *	1.618±0.32 ^c	0.682±0.16 ^b	0.302±0.05 ^a	0.270±0.09 ^a	p<0.01
Mortality	0	0	0	0	

Notes: ATFI = average total feed intake, AFI = average feed intake, FCR = feed conversion ratio, g/b = grams per bird, g/b/d = grams per bird per day, NU = no unit; SGR = specific growth rate, GE = growth efficiency for time period, Pvalue = probability value; a, b, c = means followed by different letters within rows are different by Duncan's multiple range test in 0.05.

*) Mandey et al. (2013)

Conclusion

It could be stated that supplementation gedi leaves might benefit to broiler diets for functional food exposed ambient temperature after processing the mucilage. Further studies are required to fully explore the technical of processing the mucilage respond the broiler performance.

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