

Supplementary Material

Efficacy of dietary quercetin supplementation with high-energy diet model in broilers: implications on zootechnical parameters, serum biochemistry, antioxidant status, patho-morphology and gene expression studies

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Supplementary Data

Table 1. Effect of quercetin supplementation on daily intakes and metabolizability of proximate principles in broiler chickens fed with high dietary fat

Parameters	Treatment Groups				s.e.m.	P-value
	T1 (CON)	T2 (Q)	T3 (HED)	T4 (HED+Q)		
Dry matter						
Intake(g)	142.95±4.54	143.82±6.78	153.39±12.0	142.69±8.50	3.942	0.775
			5			
Digested (g)	99.29±2.49	98.78±3.60	105.68±5.80	91.54±8.31	2.788	0.389
%Metabolizability	69.52±1.03	68.80±1.23	73.45±1.32	69.83±3.44	1.014	0.402
Organic matter						
Intake(g)	133.10±4.23	133.91±6.31	142.82±11.2	132.85±7.91	3.67	0.775
			2			
Digested (g)	92.45±2.32	91.97±3.35	98.39±5.40	85.23±7.74	2.596	0.389
%Metabolizability	72.33±0.99	71.75±1.11	76.45±0.97	74.47±2.38	0.821	0.158
Crude protein						
Intake(g)	28.94±0.92	29.12±1.37	31.06±2.44	28.9±1.72	0.798	0.775
Digested (g)	20.11±0.50	20±0.73	21.40±1.17	18.54±1.68	0.565	0.389
%Metabolizability	74.58±0.52 ^c	76.15±0.94 ^{bc}	77.70±0.25 ^{ab}	79.87±1.03 ^a	0.607	0.002
Ether extract						
Intake(g)	6.17±0.19	6.21±0.29	7.43±0.58	6.92±0.41	0.224	0.128
Digested (g)	4.28±0.10	4.17±0.55	5.12±0.28	4.44±0.40	0.192	0.322

%Metabolizability	70.46±0.91 ^b	70.88±1.14 ^b	77.48±0.76 ^a	78.95±1.02 ^a	1.076	0.000
Total carbohydrates						
Intake(g)	97.97±3.11	98.57±4.65	104.32±8.20	97.04±5.78	2.672	0.805
Digested (g)	68.05±1.70	67.70±2.47	71.87±3.95	62.25±5.65	1.901	0.385
%Metabolizability	70.45±1.08	70.44±1.58	76.44±3.02	73.62±2.71	1.009	0.089

CON - Control, Q - Quercetin, HED - High energy diet; *each treatment group contains 4 replicates (12 birds/ replicate), thus, total 48 broiler birds (n=48 birds/ treatment). The birds on treatment T1 (CON) group were fed basal diet without any supplementation. The birds on treatment T2 (Q) were fed basal diet + quercetin (1 g/kg), T3 (HED) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42 days) (finisher) weeks] and T4 (HED+Q) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42 days) (finisher) weeks] + quercetin (1 g/kg) for the age period of 2-3 (starter) and 4-6 (finisher) weeks. [**vegetable oil was fed more than 10 % of the ME requirements of birds as per BIS, (Bureau of Indian Standards, 2007)]. Data described as the means ± standards error (s. e. n=8 birds/ treatment) and pooled standard error of the mean (s. e. m.; n=8 birds/ treatment). ^{abc} Means values within the row were significantly differ ($P \leq 0.05$).

Table 2. Effect of quercetin supplementation on daily retention of nutrients: nitrogen, calcium and phosphorus in broiler chickens with fed high energy diet

Parameters	Treatment Groups				s.e.m.	P-value
	T1 (CON)	T2 (Q)	T3 (HED)	T4 (HED+Q)		
Nitrogen						
Intake(g)	4.63±0.14	4.66±0.21	4.97±0.39	4.62±0.27	0.127	0.775
Excretion(g)	1.17±0.03	1.11±0.09	1.11±0.09	0.97±0.40	0.037	0.282
Retention(g)	3.45±0.11	3.54±0.13	3.85±0.29	3.65±0.30	0.110	0.649
Calcium						
Intake(g)	1.71±0.05	1.72±0.08	1.84±0.14	1.71±0.10	0.047	0.778
Excretion(g)	0.82±0.03	0.84±0.02	0.88±0.07	0.81±0.06	0.024	0.802
Retention(g)	0.88±0.05	0.88±0.05	0.95±0.07	0.89±0.11	0.035	0.915
Phosphorus						
Intake(g)	0.88±0.02	0.89±0.04	0.95±0.07	0.88±0.05	0.024	0.758
Excretion(g)	0.31±0.03	0.36±0.02	0.41±0.06	0.28±0.03	0.225	0.195
Retention(g)	0.57±0.03	0.52±0.01	0.54±0.02	0.60±0.05	0.017	0.495

CON - Control, Q - Quercetin, HED - High energy diet; *each treatment group contains 4 replicates (12 birds/ replicate), thus, total 48 broiler birds (n=48 birds/ treatment). The birds on treatment T1 (CON) group were fed basal diet without any supplementation. The birds on treatment T2 (Q) were fed basal diet + quercetin (1 g/kg), T3 (HED) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42

days) (finisher) weeks] and T4 (HED+Q) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42 days) (finisher) weeks] + quercetin (1 g/kg) for the age period of 2-3 (starter) and 4-6 (finisher) weeks. [**vegetable oil was fed more than 10 % of the ME requirements of birds as per BIS, (Bureau of Indian Standards, 2007)]. Data described as the means \pm standards error (s. e. n=8 birds/ treatment) and pooled standard error of the mean (s. e. m.; n=8 birds/ treatment). ^{abc} Means values within the row were significantly differ ($P \leq 0.05$).

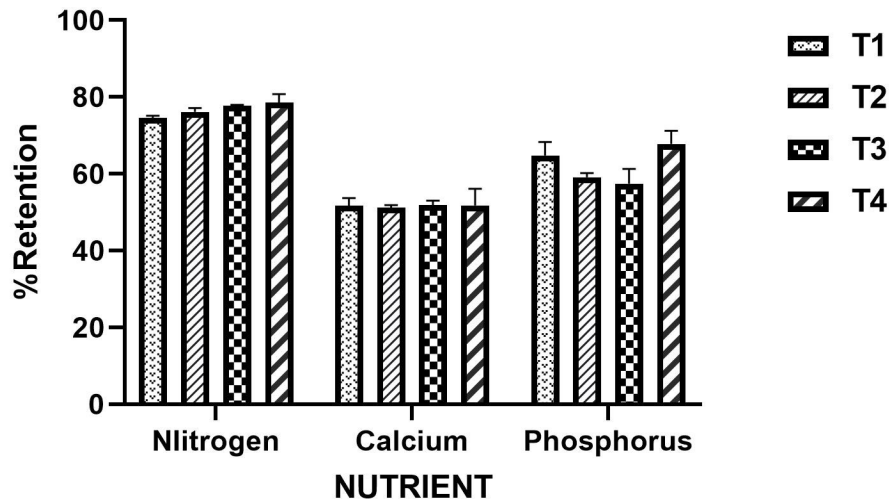


Fig. 1. Effect of quercetin supplementation on daily retention (%) of nutrients: nitrogen, calcium and phosphorus in broiler chickens with fed high energy diet. each treatment group contains 4 replicates (12 birds/ replicate), thus, total 48 broiler birds (n=48 birds/ treatment). The birds on treatment T1 (CON) group were fed basal diet without any supplementation. The birds on treatment T2 (Q) were fed basal diet + quercetin (1 g/kg), T3 (HED) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42 days) (finisher) weeks] and T4 (HED+Q) were fed basal diet + vegetable oil** [34 g/kg, during 2-3 (8- 22 days) (starter) weeks and 35 g/kg, during 4-6 (23- 42 days) (finisher) weeks] + Quercetin (1 g/kg) for the age period of 2-3 (starter) and 4-6 (finisher) weeks. [**vegetable oil was fed more than 10 % of the ME requirements of birds as per BIS, (Bureau of Indian Standards, 2007)]. Data described as the means \pm standards error (s. e. n=8 birds/ treatment) and pooled standard error of the mean (s. e. m.; n=8 birds/ treatment).