

CHICKPEAS, MUNG BEANS AND PIGEONPEAS FOR BROILERS

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The production of chickpeas, mung beans and pigeonpeas is increasing rapidly both locally and overseas, mainly for human consumption. A **stockfeed** market for these grains would permit utilisation of reject and excess production, thus **stabilising** the industry while providing a valuable protein and energy source. To date the chicken meat industry has been reluctant to use these products in broiler diets due to the suspected presence of **anti-nutritional factors** (ANF) and lack of information about possible inclusion levels of untreated grains.

Mung beans and **kabuli** chickpeas were used in experiment **1**, and desi chickpeas and **pigeonpeas** were used in experiment 2. In both experiments the grains were each incrementally incorporated into diets to **maximum** inclusion levels of **50%, 50%, 20% and 16%** respectively. Desi chickpeas and pigeonpeas had low apparent metabolisable energy content preventing them from being included at higher levels. All diets were formulated to contain 12.0 MJ ME/kg, 1.1% lysine and to meet other nutrient requirements (ARC, 1975). Each diet was fed to **4** replicates of 8 male chicks from the 5th to the 28th day of age. **Levels** of trypsin inhibitor (**TI**), chymotrypsin inhibitor (**CTI**), **lectins** and tannins were determined for each of the grain legumes.

TABLE 1 Performance of male broilers fed chickpeas, mung beans or pigeonpeas between 5 and 28 days of age, ANF levels of the diets.

Diet	LWG g/d	FCR	Pancreas g	TI mg/g	CTI	Lectin HU/ml	Tannin mg/g
<i>Experiment 1:</i>							
50% Kabuli Chickpeas	37.4 ^a	1.82 ^a	3.21 ^a	1.05	1.32	4.26	3.20
50% Mung Beans	37.8 ^a	1.77 ^a	2.65 ^b	1.24	0.20	25.6	4.70
Control	45.1 ^b	1.56 ^b	2.28 ^b	0.04	0.00	2.28	0.00
<i>Experiment 2:</i>							
16% Pigeonpeas	48.0 ^a	1.51 ^{ab}	2.44 ^a	0.31	0.28	8.34	0.64
20% Desi Chickpeas	47.1 ^a	1.47 ^b	2.80 ^a	3.32	0.62	4.42	1.70
Control	47.3 ^a	1.57 ^a	2.25 ^a	0.01	0.00	2.01	0.00

Numbers with different superscripts are significantly **different**. Numbers in italics have been calculated from concentration of ANF in the ingredients.

Pigeonpeas and desi chickpeas did not depress performance compared to the control at the levels fed. For chicks fed on mung beans and **kabuli** chickpeas performance declined as inclusion level increased resulting in lower **liveweight** gain (**p<0.001**) and higher feed conversion ratio (**p<0.001**). Birds fed **kabuli** chickpeas had heavier pancreas weights. (**p<0.001**) These results indicate the detrimental effect of feeding these gram legumes presumably due to their ANF content. This is in contrast to the findings of Johnson and Eason (1990). However they did not report their ANF levels which can vary markedly between batches of the same legume (Batterham and Saini, 1990).

ARC (1975) Nutrient Requirements of Poultry.

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