

Research Notes P-63

Arm & Hammer Animal and Food Production



Effects of BG-MAX and Yeast Culture on production performance and immunology of broiler chickens.

INTRODUCTION

A research trial¹ was conducted at the Institute of Veterinary Pharmaceuticals, Huazhong Agricultural University, Wuhan, P. R, China by Dr. Yuan.

OBJECTIVE

To determine the effects of BG-MAX™ and other yeast products on production performance and immunology of broiler chickens.

MATERIALS & METHODS

A total of 180 AA (Arbor Acres) day old chicks were randomly allocated to six groups, with 6 replicates (pens) per treatment and five chicks per replicate.

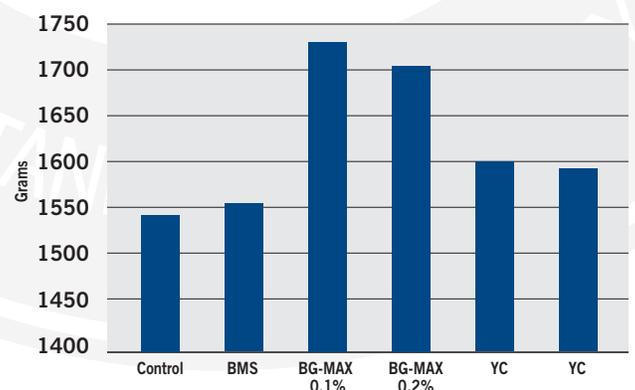
1. Control group
2. Control group + 0.1% BMS
3. Control group + 0.1% BG-MAX
4. Control group + 0.2% BG-MAX
5. Control group + 0.1% YC
6. Control group + 0.2% YC

Products tested were BG-MAX (yeast-based feed conditioning agent manufactured in USA), BMS (yeast cell wall product manufactured in USA) and YC (yeast culture manufactured in China). Body weight and feed consumption were measured at days 1, 21 and 42. ADG and feed/gain were calculated. At day 42, 12 broilers per group were sacrificed and blood samples were taken for measuring immunological response. Simple diets were used for the trial to create some challenge (no antibiotic or anticoccidial additives were added to the diets). Birds were vaccinated against NDV, IB and IBD. All analysis was conducted using ANOVA procedure of SPSS® 13.0 software. Means were compared using the least significant difference procedure. Differences were considered significant when $P < 0.05$.

RESULTS

Results on production performance are shown in Tables 1 and 2. All yeast treatments improved ADG. Only BG-MAX at 0.1% and 0.2% had significantly higher ADG from days 1 to 42 ($P < 0.05$). BG-MAX at 0.1% and 0.2% showed better feed efficiency from days 1 to 42. Results on immunological responses are shown in Tables 3 and 4. All yeast products enhanced the broiler's humoral immunity and the peripheral lymphocyte B proliferation rate when stimulated with LPS compared to control ($P < 0.05$). BG-MAX 0.1% treatment had the highest concentration of serum IgA and IgG levels among the groups.

FIGURE 1: Body weight on day 42.



CONCLUSIONS

BG-MAX™ significantly increased ADG and Feed Efficiency over control and improved overall performance of the birds compared to all other treatments. BG-MAX, YC and BMS significantly improved cellular and humoral immunity. Results showed that BG-MAX significantly strengthened the immune response of B lymphocytes by increasing IgG and IgA.

TABLE 1

The effects of BG-MAX and YC on average daily gain (ADG).

Group	Days 1 – 21, g	Days 22 – 42, g	Days 1 – 42, g
Control	28.0 ^a	43.1 ^a	35.6 ^d
Control + 0.1% BMS	28.8 ^{ab}	43.3 ^a	36.1 ^{cd}
Control + 0.1% BG-MAX	29.9 ^c	50.1 ^b	40.0 ^a
Control + 0.2% BG-MAX	29.3 ^{bc}	49.9 ^b	39.6 ^{ab}
Control + 0.1% YC	29.8 ^c	44.0 ^a	36.9 ^{bcd}
Control + 0.2% YC	29.3 ^{bc}	44.0 ^a	36.6 ^{cd}

TABLE 2

The effects of BG-MAX and YC on feed efficiency (feed:gain).

Group	Days 1 – 21	Days 22 – 42	Days 1 – 42
Control	1.644 ^a	3.14	2.52 ^a
Control + 0.1% BMS	1.627 ^{abc}	3.14	2.52 ^a
Control + 0.1% BG-MAX	1.542 ^{bc}	2.81	2.33 ^{ab}
Control + 0.2% BG-MAX	1.519 ^c	2.76	2.29 ^b
Control + 0.1% YC	1.545 ^{bc}	3.02	2.41 ^{ab}
Control + 0.2% YC	1.525 ^c	2.98	2.40 ^{ab}

TABLE 3

The effects of BG-MAX and YC on peripheral lymphocyte conversion ratio.

Group	SI (ConA)	SI (LPS)
Control	0.933	0.834 ^e
Control + 0.1% BMS	0.934	1.853 ^a
Control + 0.1% BG-MAX	0.917	1.346 ^c
Control + 0.2% BG-MAX	0.900	1.745 ^a
Control + 0.1% YC	0.859	1.211 ^c
Control + 0.2% YC	0.917	1.904 ^a

TABLE 4

The effects of BG-MAX and YC on serum immune globulins.

Group	IgA (g/L)	IgG (g/L)	IgM (g/L)
Control	0.511	0.225 ^a	0.466
Control + 0.1% BMS	0.730	0.571 ^{ac}	0.630
Control + 0.1% BG-MAX	0.796	1.045 ^c	0.448
Control + 0.2% BG-MAX	0.703	0.718 ^{ac}	0.440
Control + 0.1% YC	0.523	0.693 ^{ac}	0.452
Control + 0.2% YC	0.592	0.618 ^{ac}	0.439

Means in the same column without common superscripts differ ($P < 0.05$)



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1 Data on file.

