

EFFECT OF A-MAX CONCENTRATE SUPPLEMENTATION ON PERFORMANCE AND ANTIBODY RESPONSE IN BROILERS

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Introduction: In recent years, substitution of antibiotics with prebiotics and probiotics has been considered by many poultry producers in Iran and elsewhere in the world.

Objective: To compare the effect of using a probiotic and a prebiotic (A-MAX™ Concentrate) in diets of broilers on performance and antibody response after vaccination in the broilers.

Materials & Methods: There were three treatments in the experiment:

- Control diet: No antibiotic or coccidiostat
- Probiotic diet: Commercial Probiotic containing *E. faecium*, *B. bifidum*, *L. casei*, and *L. Acidophilus*, 90 and 45 grams/ton of starter and finisher control diet respectively
- Prebiotic diet: A-MAX Concentrate 3kg/ton of starter and finisher control diet

360 one-day-old Ross, male broiler chickens were randomly assigned to the three treatments. There were 4 pens with 30 chickens per pen for each of 3 treatments. The chicks were fed a starter diet (1-21 d) and finisher diet (22-42 d). Chickens were vaccinated against Infectious Bursal Disease (IBD) by D78 live vaccine on days 11, 21, and 31 and against Newcastle by B1 type, LaSota live vaccines on days 7 and 16. The weight of chicks and feed consumed was recorded weekly. Anti-IBD and anti-Newcastle antibody titer was measured at selected intervals.

Results: Supplementation of prebiotic A-MAX significantly increased weight gain in chicks compared to control and probiotic fed diet (2172, 2087, and 2105 g respectively $p < 0.05$) at 42 days of age (Fig 1, Table 1). Feed/gain was significantly improved with A-MAX treatment group compared to control and probiotic treatments (1.88, 1.99, and 1.97 respectively, $p < 0.05$, Fig 2, Table 3). Mortality was not significantly different in the three treatment groups. Supplementation of both prebiotic (A-MAX) and probiotic in the diet increased anti-Newcastle antibody titer in chicks, but the increase was not significant (Table 4); however, chickens on A-MAX showed a higher antibody titer than the other two treatments. Similarly, mean titer of anti-IBD antibody was higher in the A-MAX group, but the difference was not significant (Table 5). A comparison of the Coefficients of Variation (CV%) on IBD titers showed that there was more uniformity in A-MAX group and lower CV% as compared to control and probiotic groups (24, 30, and 28 respectively).

Conclusions: Chickens on an A-MAX-supplemented diet were significantly heavier, had significantly improved feed/gain, and had numerically higher Newcastle and IBD antibody titers compared to the other treatments.

Table 1: Body Weight, grams a-b: means within column with different superscripts differ significantly (P<0.05)

Days	7	14	21	28	35	42
Control	148	362	697	1245 ^b	1705	2087 ^b
Probiotic	156	384	715	1267 ^a	1724	2105 ^b
A-MAX TM Conc	153	373	722	1278 ^a	1731	2172 ^a
P Value	0.48	0.45	0.28	0.044	0.23	0.018

Table 2: ADFI, grams

Days	7	14	21	28	35	42
Control	168	529	1118	2024 ^{ab}	3132 ^b	4158 ^b
Probiotic	174	548	1141	2041 ^b	3129 ^b	4149 ^b
A-MAX Conc	166	541	1109	1997 ^a	3069 ^a	4087 ^a
P Value	0.30	0.41	0.281	0.047	0.032	0.024

Table 3: Feed/Gain

Days	7	14	21	28	35	42
Control	1.13	1.46	1.60	1.62	1.83	1.99 ^b
Probiotic	1.10	1.42	1.59	1.61	1.81	1.97 ^b
A-MAX Conc	1.08	1.45	1.53	1.56	1.77	1.88 ^a
P Value	0.21	0.18	0.30	0.32	0.312	0.03

Table 4: Newcastle Response (Vaccinated on days 7 and 16)

Days	1	6	15	42
Control	4.2	2.6	1.75	4.05
Probiotic	4.2	2.5	2.2	4.21
A-MAX Conc	4.2	2.1	2.6	4.72

Table 5: IBD Antibody Response (Vaccinated on days 11, 21, and 31)

	Days	1	10	20	30	42
Control	Mean Titer	3647	1669	878	2285	3262
	% CV	19.2	44.16	91.4	38.6	30.5
Probiotic	Mean Titer	3647	1474	612	2171	3512
	% CV	19.2	40.27	83.47	40.9	28.21
A-MAX Conc	Mean Titer	3647	1312	902	2607	3916
	% CV	19.2	41.57	63.69	36.4	24.6

Figure 1--Weight Gain

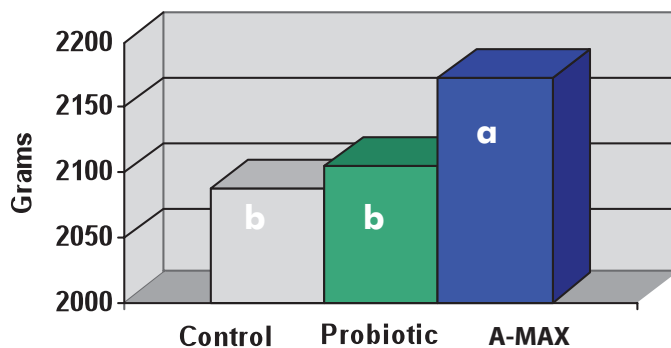
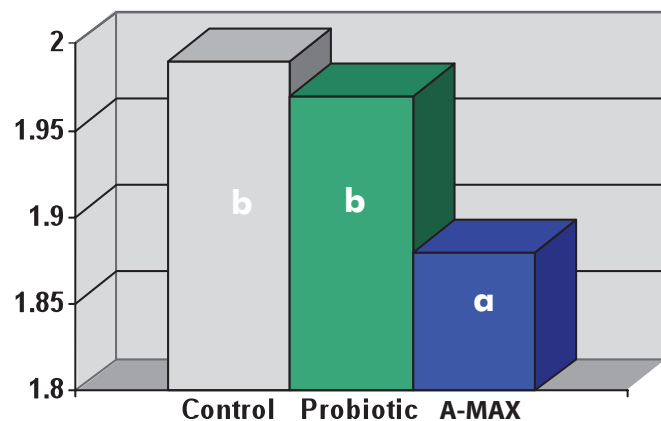


Figure 2--Feed/Gain



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