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Maxi-Gen^{Plus}
ENHANCED
YEAST
TECHNOLOGY

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EXPLORE THE BENEFITS OF YEAST.

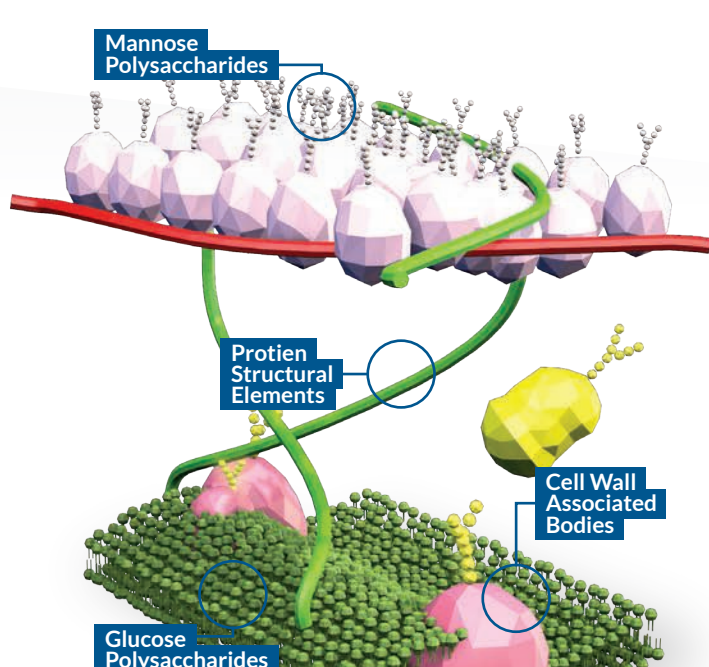
Yeast and yeast by-products have long played a role as supplemental ingredients in commercial livestock nutrition programs. Historically, yeast (i.e., *Saccharomyces cerevisiae*) from the brewing and baking industry was used in farm animal nutrition programs as they were known to improve rumen function and increase production performance. Later, yeast by-products were adopted into swine, poultry, aquaculture, and companion animal feeding programs as they were shown to improve growth performance and overall health. However, the exact mode or modes of action have yet to be fully elucidated.



MAXI-GEN[®] PLUS CONTAINS THREE ACTIVE YEAST COMPONENTS

Whole Yeast

Whole yeasts are either live, inactivated, or composed of the entire yeast cell and fed for their ability to propagate within the gastrointestinal tract (GIT) and in turn improve the GIT microbiome environment (i.e., act as a probiotic).



Yeast Cell Wall

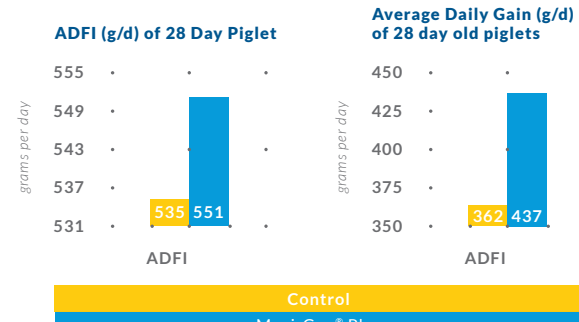
Yeast cell wall products are by-products of yeast processing and contain soluble and insoluble cell wall fractions of whole yeast containing associated proteins, as well as, mannose- and glucan-based polysaccharides. Yeast cell wall products have been proposed to have two modes of action: the first being as a prebiotic by promoting the growth of non-pathogenic beneficial bacteria within the GIT which in turn leads to improved growth performance, immunity, and health. The second proposed mode of action is by virtue of the carbohydrate fraction that serves to directly bind to the fimbriae of potentially pathogenic bacteria or attach to cellular pathogen binding sites along the GIT, thus excluding these organisms from eliciting pathological effects within the intestinal environment.

HOW DOES IT PERFORM?

Enhancing Growth Performance in Weaned Pigs

A 28 day study was conducted to determine the benefits of supplementing nursery pig diets with Maxi-Gen[®] Plus. A total of 36 pigs with an initial BW of 7.11±0.9 kg were weaned at 21 days of age and were randomly assigned to either a control or Maxi-Gen[®] Plus supplemented diet (1 kg/ml) and were housed 3/pen with 6 replicate pens/treatment.

It can be seen below that pigs supplemented with Maxi-Gen[®] Plus gained an additional 75 g/day versus unsupplemented pigs, which represented a significant improvement in ADG (P<0.05).

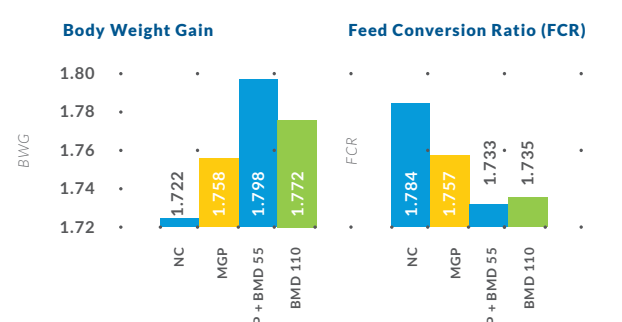


Enhancing Broiler Chicken Performance

TRIAL 1

A study was conducted at the Southern Poultry Research Station (Athens, Georgia) to determine the synergistic effects of Maxi-Gen[®] Plus (MGP) and BMD (Bactracin Methylene Disalicylate) supplementation in broiler chicken diets. A total of 1600 Cobb 700 birds were housed under commercial conditions for 42 days.

Dietary treatments were as follows:
+ Negative control (NC; no MGP, no BMD)
+ NC + 0.5 kg MGP
+ NC + 0.5 kg MGP + 55 ppm BMD
+ Positive Control (PC; 110 ppm BMD)



TRIAL 2

A feeding trial was conducted to determine the effects of including Maxi-Gen[®] Plus in broiler chicken diets as compared to traditional growth promoting antibiotic supplementation. A total of 648 Ross 308 birds were housed under commercial conditions, with a stocking density of 0.074 m²/bird, for 35 days.

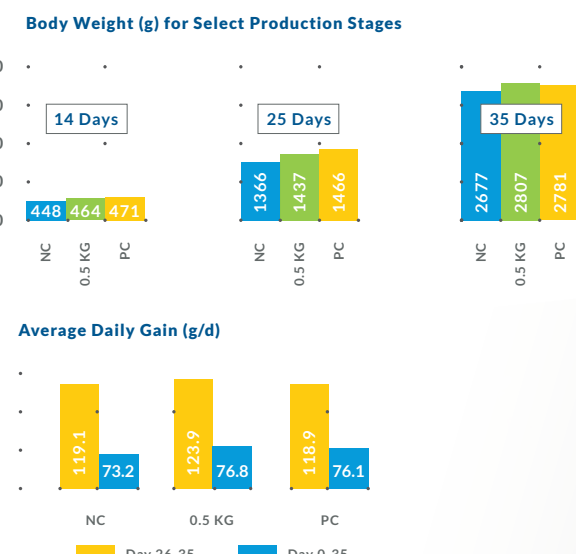
Dietary treatments were as follows:
+ Negative control (NC; no MGP, no BMD)
+ NC + 0.5 kg MGP
+ Positive Control (PC; 55 ppm BMD)

Body weight gain was not affected by treatment at 14 days of age. However, by day 35, birds supplemented with Maxi-Gen[®] Plus were significantly heavier than NC birds and weighed the same as PC birds.

Overall, diets supplemented with 1 kg of Maxi-Gen[®] Plus resulted in the greatest body weight gain and ADG over the entire trial period.

THE BOTTOM LINE

+ BWG and FCR are improved when broiler chicken diets are supplemented with Maxi-Gen[®] Plus
+ Using Maxi-Gen[®] Plus can assist in reducing growth promoting antibiotic usage in broiler chicken diets
+ Maxi-Gen[®] Plus acts synergistically with BMD and significantly improves broiler chicken performance



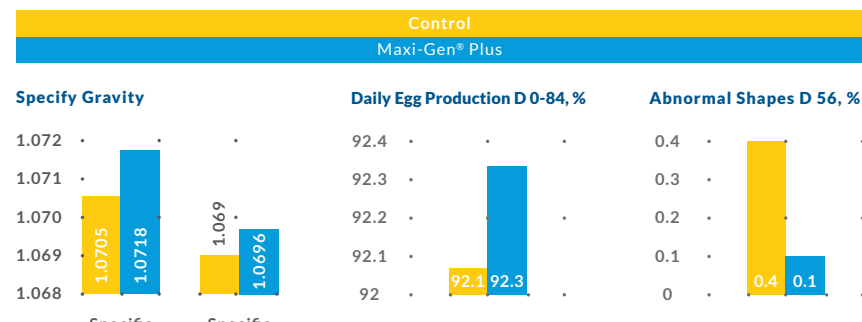
THE BOTTOM LINE

+ Maxi-Gen[®] Plus improves BW for broiler chickens
+ Maxi-Gen[®] Plus improves ADG for broiler chickens
+ Maxi-Gen[®] Plus is an effective substitute for growth promoting antibiotics

Improving Performance in Late Lay Hens

A feeding trial was conducted to determine the effects of including Maxi-Gen[®] Plus in layer chicken diets. A total of 12,000 57 week old Lohmann hens were housed under commercial conditions separated into 8 groups and 500 hens per group. The trial started at 95% production and were fed late lay diets (115g/day) for 12 weeks starting from week 37. Performance and egg quality were measured throughout the trial period.

Dietary treatments were as follows:
+ Control
+ Maxi-Gen[®] Plus - 500g/MT
+ Competitor Product



Improving Dairy Calf Performance

A 6-week study was conducted at Old College (Olds, AB) to determine if supplementing dairy calf diets with Maxi-Gen[®] Plus would improve growth performance. Twenty Holstein bulls (BW = 43.3 kg) were randomly assigned to control or treatment groups. Control calves were fed a commercial diet while treatment calves were fed the same diet supplemented with Maxi-Gen[®] Plus (20 g/kg MGP). Animals were housed individually (32 ft² pens) on wood shavings and had ad lib access to feed and water. Maxi-Gen[®] Plus was mixed with a milk replacer for the initial phase of the study and within a complete dry ration after weaning was completed.

TABLE				TABLE			
[1] Mean Body Weights (kg)				[2] Average Daily Feed Intake (kg/day)			
Week	Control	MGP	P-Value	Control	MGP	P-Value	
0	42.9	43.7	0.689	-	-	-	
1	42.2	45.5	0.110	0.325	0.364	0.096	
2	43.4	48.2	0.088	0.556	0.785	0.041	
3	49.0	55.4	0.058	1.003	1.268	0.074	
4	55.3	62.2	0.055	1.354	1.640	0.110	
5	62.5	68.8	0.061	1.865	2.041	0.280	
6	69.6	76.7	0.053	2.255	2.626	0.054	

THE BOTTOM LINE

+ Maxi-Gen[®] Plus supplementation improved body weight gain in dairy calves
+ Body weight gains were driven by improved feed intake as a result of Maxi-Gen[®] Plus supplementation
+ Supplementing dairy calf diets with Maxi-Gen[®] Plus can lead to significant economic benefits

Aquaculture Research

Two studies were conducted at the University of Texas A&M to assess the immune enhancing properties of Maxi-Gen[®] Plus in striped bass (*Morone chrysops* × *M. saxatilis*). Diets were fishmeal based and were balanced for energy, nitrogen and lipid content. Maxi-Gen[®] Plus was included at a level of 1 kg/MT of complete feed.

Study 1 consisted of a feeding trial conducted over 8 weeks with 15 fish/group and 4 groups/treatment. After 8 weeks, 30 fish per treatment were selected and fed experimental diets for an additional 7 weeks. Fish were then challenged with *S. iniae* (8.4x10⁵ CFU/ml) for 2-hrs and performance recorded for an additional 3 weeks.

TABLE / STUDY 1				Performance and Health Data			
Week	Control	MGP	P-Value	Wt Gain, % Initial	FCR	Mortality Phase I, %	Mortality Phase II, %
0	389	423	0.10	3%	1.09	20.0	83.8
1	1.08	1.08	0.95	388	1.11	3.30	52.2
2	40.0	13.3	0.09	0.58	0.63	0.19	0.02

Study 2 consisted of a feeding trial conducted over 6 weeks with 13 fish/group and 4 groups/treatment. After 6 weeks, 30 fish per treatment were selected and fed experimental diets for an additional 7 weeks. Fish were then challenged with *S. iniae* (8.4x10⁵ CFU/ml) for 2-hrs and performance recorded for an additional 3 weeks.

TABLE / STUDY 2				Performance and Health Data			
Week	Control	MGP	P-Value	Wt Gain, % Initial	FCR	Mortality Phase I, %	Mortality Phase II, %
0	389	423	0.10	3%	1.09	20.0	83.8
1	1.08	1.08	0.95	388	1.11	3.30	52.2
2	40.0	13.3	0.09	0.58	0.63	0.19	0.02

THE BOTTOM LINE

Feeding Maxi-Gen[®] for short periods of time can significantly improve the immunological response to a *Streptococcus iniae* infection. This improved response can assist in managing stress events such as vaccination, handling and disease.
+ Maxi-Gen[®] Plus supplementation reduced mortality associated with an experimental infection
+ Low inclusion level can assist in formulation flexibility
+ Maxi-Gen[®] Plus may also help improve growth performance

SUMMARY OF KEY BENEFITS

- + Improves growth performance
- + Alleviates stress
- + Boosts immune status
- + Improves gut health
- + Reduces antibiotic usage
- + Ideal for all vegetable feeding programs
- + Multiple active components in one product