BIOZYME

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AUSTRALIAN MADE

MORE HIGH QUALITY MEAT WITH LESS FEED BY USING ADVANCED MULTI-ENZYME TECHNOLOGY

IMPROVE DIGESTIBILITY | LOWER FEED COSTS | HIGHER QUALITY MEAT | HIGHER NET PROFITS

BIOZYME HIGH QUALITY GOOD RESULTS

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BIOPROTON PTY LTD

Bioproton is an Australian based biotechnology company with core business in developing, manufacturing and marketing high quality feed enzyme supplements. The company was founded in 1984 in Finland. In 1993 the company relocated to the fast growing Asia-Pacific region and today the head-office, product development and manufacturing operations are based Brisbane, Australia. Bioproton has a global marketing and distribution network covering Africa, Asia, Europe, Russia, Middle East, North and South America. Customer can be supplied from facilities in Brisbane, Australia or Atlanta, USA.

BIOZYME

BIOZYME is a high quality & multi-activity feed enzyme formulated for piglet/pigs, broiler, layer, duck, turkey and aqua feeds to enable better nutrient utilisation, resulting in more high quality meat with lower total costs.

BIOZYME contains cellulose, xylanase, beta-glucanase, alpha-amylase, protease, pectinase and phytase and other enzymes. The enzymes have a wide pH range, stability and temperature tolerance and high levels of activity enabling BIOZYME to be successfully applied to animal feeds across the world with excellent results under wide ranging conditions.

MORE HIGH QUALITY MEAT WITH LESS FEED BY USING ADVANCED MULTI-ENZYME FEED ENZYME TECHNOLOGY.

MAIN BENEFITS OF BIOZYME

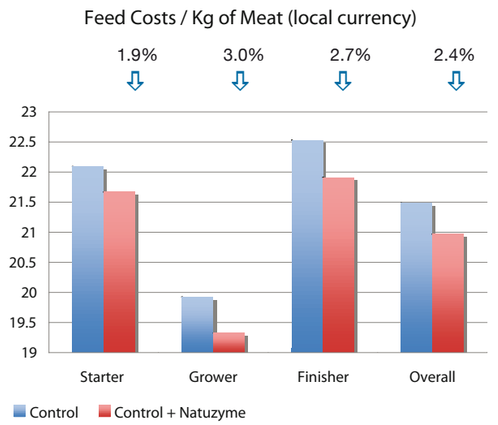
Improve the digestibility key feed components, enabling the use of cheaper/locally produced diets without compromising productivity or meat quality. The inclusion of phytase reduces Inorganic Phosphorous (Dicalcium phosphate) use, resulting in cost savings and better environmental outcomes. Effective in many different animals, e.g. piglets/pigs and broiler, layer, duck, turkey and aqua feeds. Effective in corn/soya and wheat/rice bran based diets and makes it possible to use less expensive, locally produced vegetable protein material.

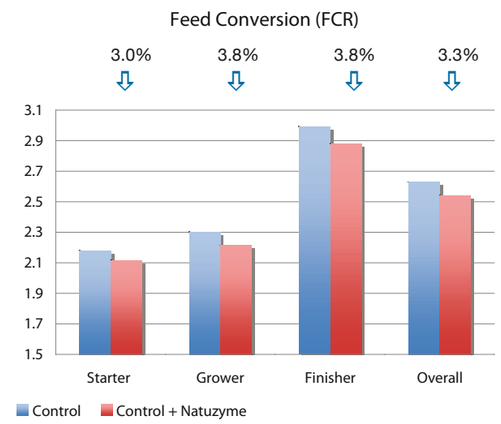
- **Reduce feed ME content and inorganic phosphorous use.**
- **Enable the use cheaper / locally produced diets.**
- **Reduces wet droppings, with fewer odours and less flies/mosquitoes.**
- **Enable the elimination of antibiotic growth promoters (AGP)**
- **Piglets show less post-weaning syndrome.**
- **BIOZYME tolerates pelleting up to 90C.**
- **BIOZYME can be added to feed before or after pelleting.**
- **BIOZYME improve uniformity in weight gain.**
- **BIOZYME has a favorable effect on both performance and health status.**

BIOZYME ENABLES BETTER FEED CONVERSION (FCR)

✔ MORE MEAT
✔ HIGHER NET PROFIT

Superior multi-property effect of BIOZYME improves the digestibility of feed diets, improves nutrient utilization and animal performance in fattening big feeds (starter/grower/finisher). This resulted in improvements in body weight gain, feed conversion resulting in more meat and more net profit. The diet on this trial was corn / soybean meal basal diet.



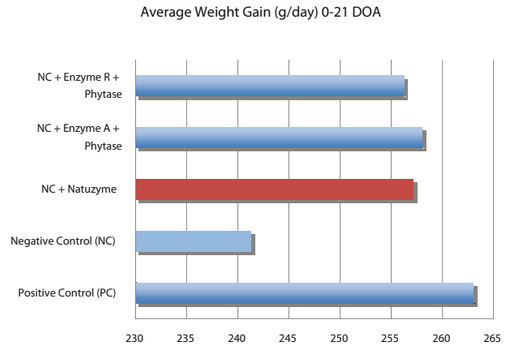


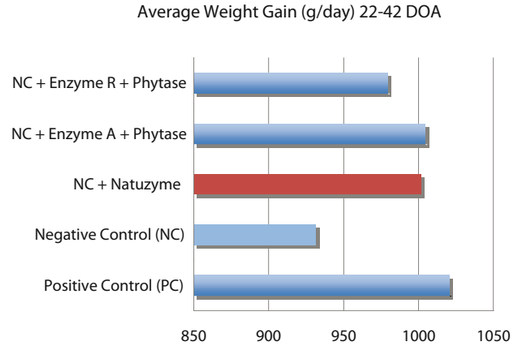
(Khon Kaen University Thailand 2002)

BIOZYME REDUCES COSTS AND BEATS COMPETITORS ON VALUE

✔ BETTER NUTRIENT UTILISATION
✔ HIGHER NET PROFIT
✔ NO ADDITIONAL PHYTASE REQUIRED
✔ NEGATIVE CONTROL DIET: **ME ⇩140 Kcal/kg and ⇩Available P 0.1%**

In a broiler study, to evaluate the effectiveness of different multienzyme brands (BIOZYME, Enzyme R + Phytase, Enzyme A + Phytase) in a negative control diet (140 Kcal/kg less ME and less 0.1% Available P) compared to a positive control diet. BIOZYME beat two leading competitors on value, without needing additional phytase. BIOZYME contains both NSP degrading enzymes and Phytase. The diet was corn / soybean meal.





(USA 2010)

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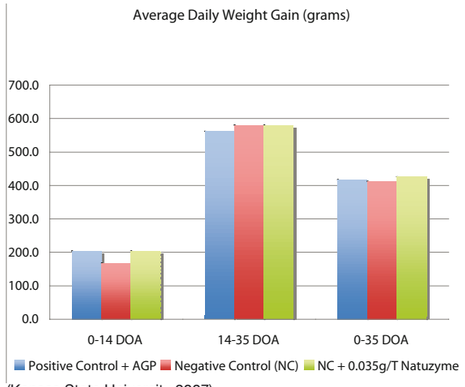
BIOZYME REPLACES AGP AND REDUCES ENERGY REQUIREMENT

- ✔ REPLACE AGPs (ANTIBIOTIC GROWTH HORMONES)
- ✔ BETTER NUTRIENT UTILISATION
- ✔ LOWER COSTS
- ✔ HIGHER NET PROFIT
- ✔ NEGATIVE CONTROL DIET: **ME 165 Kcal/kg and no AGPs**

In a swine trial, supplementing BIOZYME improved weight gain and reduced feed costs. Less expensive Soy Hulls replaced Corn / Soybean Meal. In the trial BIOZYME showed it can replace AGP and reduce Metabolisable Energy (ME), Lysine, and Protein in Feed, while still achieving good weight gain. This resulted in lower costs and higher net profit. The trial diet was corn / soybean meal.



(Kansas State University 2007)

BIOZYME ENABLES LOWER FEED QUALITY

- ✔ BETTER NUTRIENT UTILISATION
- ✔ LOWER COSTS
- ✔ HIGHER NET PROFIT

The supplementation of BIOZYME at the level of 0.35kg/ton can be done by the reduction of 2.5% of 3,100 Kcal ME/kg during the starter period (0-21DOA), 5.0% of 3,150 Kcal ME/kg during the grower period (22-42DOA), and 7.5% of 3,200 Kcal ME/kg during the finisher period (43-49DOA) without any detrimental effects from the control diet of broiler diet. The trial diet was corn / soybean meal.

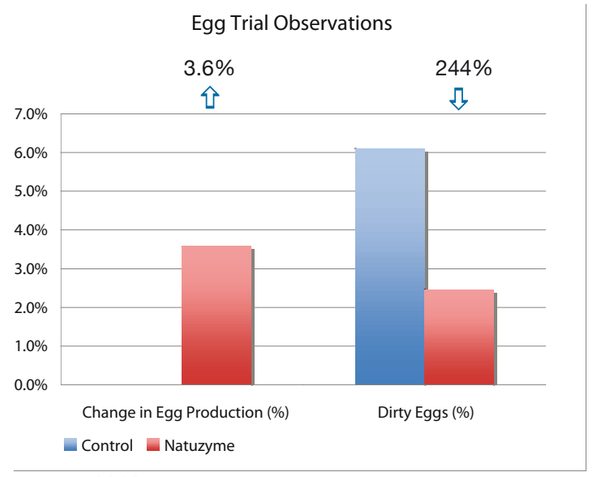
	Diet	Weight Gain (grams)	FCR
Starter (0-21DOA)	Control	710.7	1.5
	Control -2.50% ME + Natuzyme	684.8	1.6
Grower (22-42DOA)	Control	1202.3	2.5
	Control -5.00% ME + Natuzyme	1195	2.5
Finisher (43-49DOA)	Control	302.1	4.3
	Control -7.50% ME + Natuzyme	303.5	4.4

(Kasetsart University Thailand 2005)

BIOZYME INCREASES EGG PRODUCTION

- ✔ BETTER NUTRIENT UTILISATION
- ✔ MORE HIGHER QUALITY EGGS
- ✔ HIGHER NET PROFIT

In a layer trial conducted in Ukraine in September of 2010. Diet was a basal diet with combination of wheat, barley, oat, soybean and sunflower. In the trial BIOZYME increased egg production by 3.6 % and reduced the number of dirty eggs by from 6.1% to 2.5%. BIOZYME was able to do this by increasing the nutritional intake of feed and reducing the quantity of excreta, leading to improved egg production economics.



(Ukraine 2010)

COMPARATIVE TRIAL

- ✔ BETTER NUTRIENT UTILISATION V. LEADING NSP ENZYMES
- ✔ LOWER COSTS
- ✔ HIGHER NET PROFIT

The trial compared the impact on AME (Apparent Metabolisable Energy) of leading NSP enzymes on broilers fed a basal diet with either wheat / sorghum. On wheat diets, BIOZYME was 3rd in terms of AME improvements and on sorghum based diets, BIOZYME ranked 1st in terms of AME improvements. Results are summarized in the table below. The multienzyme impact of BIOZYME's xylanase, a-amylase, b-gluganase, phytase, protease and phytase enable broilers to digest cheaper (and often locally produced feeds) while achieving good productivity. Another important feature of BIOZYME is the inclusion of Phytase – enabling reduction in available P in feed.

Diet	Group	AME, kJ/kg DM	Improvement AME, kJ/kg DM	Improvement, %
Wheat	Control	3,035	-	-
	Average	3,119	84	2.80%
	Natuzyme	3,140	105	3.50%
Sorghum	Control	3,525	-	-
	Average	3,556	31	0.90%
	Natuzyme	3,593	68	1.90%

(Massey University 2010)

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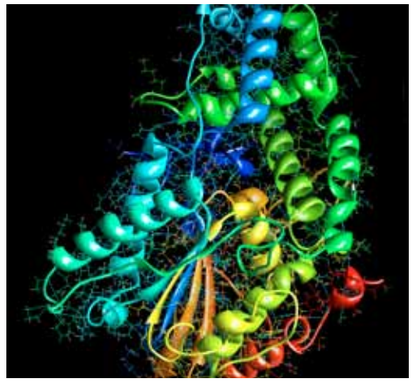
TECHNOLOGY PARTNERS

Growth in global food demand is placing pressure on the global agricultural sector to deliver safe, efficient and environmentally sustainable food to meet the demands of current and future generations. Enzyme supplementation to animal feeds plays a critical role in meeting this challenge. Bioproton, a feed enzyme manufacturer, is collaborating with the Australian Institute for Bioengineering and Nanotechnology (AIBN) in developing and producing feed enzymes with improved characteristics.

The University of Queensland's Australian Institute for Bioengineering and Nanotechnology (AIBN) is an integrated multi-disciplinary research institute bringing together the skills of world-class researchers in the areas of bioengineering and nanotechnology. It is home to 19 research groups working at the interface of the biological, chemical and physical science to alleviate current problems in human health and environmental issues.



QUALITY ASSURANCE

Users of BIOZYME expect them to be safe, effective and of a high quality. Bioproton follows Good Manufacturing Practices (GMP) regulated by APVMA (Australian Pesticides and Veterinary Medicines Authority). This ensures BIOZYME is manufactured consistently, by a specified method, under adequate supervision and with effective quality control procedures.

ACTIVITE ENZYMES

Cellulase
Xylanase
b-Glucanase
a-Amylase
Protease
Pectinase
Phytase

APPLICATION

Upgrading feed efficiency of cereal diets on pigs, poultry (layers and broilers), turkeys and aqua feed

RECOMMENDED DOSE RATE

Typical dosage rate 350 g /T feed

PRODUCT INFORMATION

Micro-granulated enzymes
Resistance to heat pelleting up to 90C
Storage for 24mths at room temperature
20kg Bags (3 paper and 1 polyethylene layers)