

# Newsletter

Vol. 3, No. 33, December 2005

Biomín®

## > EDITORIAL

### Health – the growth promoter of 2006!



Health is an essential parameter for the economic performance in animal husbandry. It is the veterinarian who is responsible for diagnosing and curing the symptoms of diseases, which however are just the tip of the iceberg. Of major importance are sub-clinical factors and symptoms, which influence the performance negatively. According to a recent study, chronic manifestations of diseases impair feed conversion by 0.1 to 0.4 points and can prolong fattening periods considerably resulting in economic losses. Since Antibiotic Growth Promoters (AGPs) have been banned in the European Union, nutritionists are now faced with the challenge to find alternatives. The animal's digestive system and the animal's health status are of utmost importance to develop performance at a high level. There are many alternatives to Antibiotic Growth Promoters suddenly appearing in the market. BIOMIN has long been involved in discovering these types of alternative approaches to AGPs. We have invested in a lot of research work to develop strategies to protect animals against digestive stress, which often contributes to poor performance and ultimately disease problems. Scientific trials have revealed that our innovative Natural Growth Promoters have proven to be efficacious in maintaining a healthy animal. **Biomín® Natural Growth Promoters give excellent value, and will help pig and poultry producers maintain profits in their operations, ... not only for 2006 but also in the future!**

Sigrid Pasteiner

## Biomín® Natural Growth Promoters –

*BIOMINs long lasting experience  
turns to account!*

Biomín® Natural Growth Promoters

**BIOMIN has more than 20 years of experience with concepts associated with antibiotic-free feeding. Since the company was established in 1983, we have offered an antibiotic-free premix for piglets to our customers. This was at a time when the use of antibiotics was general practice and nobody discussed the related risks. BIOMIN has thus been a mentor and pioneer in this issue. From that time, continuous research work has been done resulting in very efficient feed additives. These feed additives are based on natural ingredients, which are able to unlock the performance potential of our animals. All of BIOMINs researched strategies that were created for animal nutrition always focused on ways not only to benefit the animal but also on ways to optimise producer and consumer benefits. So efficiency and safety of our concepts has been our intention in the daily research work.**

## Ban of AGPs in the European Union

**N**ow, Antibiotic Growth Promoters (AGPs) have been banned in the European Union, and this regulation has been extended to Asian and American producers that are also supplying pig and poultry products to European markets. BIOMINs traditional research work for alternatives and our continuous experience in Natural Growth Promoters value the benefits of innovative and sustainable solutions.

Our strategies concentrate on supporting the animal's endogenous defences against diseases by nutritional means.

This has been neglected as antibiotics cure a lot of symptoms, however the cause of the problems is still there. To find the reason why the digestive tract is malfunctioning, is the crucial point in our research and all our dietary concepts aim to support a healthy gut.

### What are the requirements for a healthy gut?

Closely connected with the state of health of the gut is a well-balanced intestinal micro-flora, which protects the host against invading pathogens. **Floral health** is a new term, which underlines the importance of the microbiota of the intestine to health. This floral health can be considered as a **pre-condition for a healthy gut**.

Chickens are known to be very sensitive to infections during the first weeks of life because of delayed onset development of their intestinal flora. Before intensive production systems were introduced, newly hatched chicks acquired the full variety of intestinal bacteria during their first days of life from eggshells and by pecking the faeces of adult birds. Today from a commercial setting the development of the intestinal flora is remarkably delayed when the link between the generations has been cut off. This leaves the hatchlings vulnerable to *Salmonella* and other enteropathogens. To overcome this problem a quick establishment of a normal intestinal micro-flora, which protects the host against invading pathogens, is indicated. By providing defined viable bacteria (probiotics) to the young bird, the phenomenon of competitive exclusion (CE) is realised. The beneficial bacteria multiply and colonise the gut. They become dominant and the proliferation of enteropathogens is suppressed.

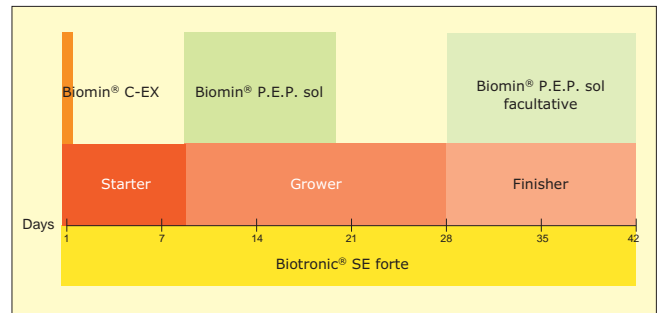
At the same time non-absorbable food components that beneficially stimulate gut beneficial microbe groups (prebiotics) support a perfect balance, the so-called eubiosis in the gut. Inulin and oligofructose are not digested in the small intestine and reach the colon intact where they are fermented by the micro-flora, particularly by the lactic acid bacteria bifidobacteria and lactobacilli spp.. **Symbiotics** contain both probiotics and prebiotics, providing both the micro-organisms and the specific substrate needed for fermentation.

### Thus, to establish a well-balanced intestinal micro-flora paves the way for a healthy gut.

As an essential part of the immune system is associated with the intestine, its health status is of particular importance. The gut-associated immune system consists of unspecific (macrophages, dendritic cells f.i.) and specific components (Peyer'sch Plaques, lymphocytes f.i.). It provides a special category of antibodies, the IgA-antibodies. IgA is the predominant antibody in body fluids of mucous membranes and responsible for defence reactions with pathogens and has an anti-inflammatory effect.

## Biomim® Natural Growth Promoters for Broilers

### Application via drinking water

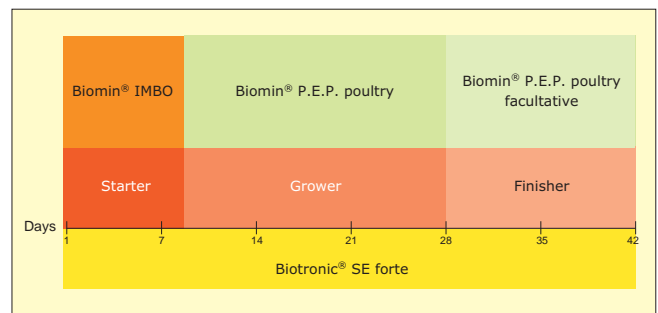


**Biomim® C-EX** during critical situations like antibiotic treatment, vaccination stress, wet litter, empty feed pipeline, heat stress

Figure 1

## Biomim® Natural Growth Promoters for Broilers

### Application via feed

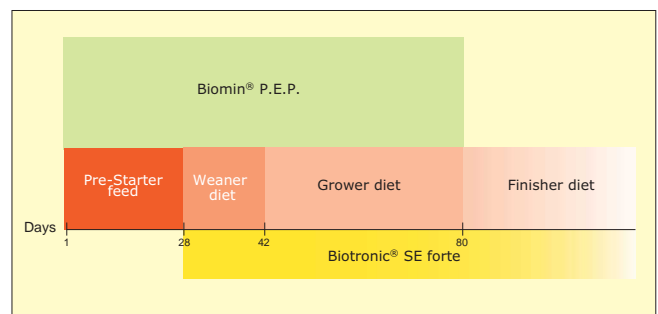


**Biomim® C-EX** during critical situations like antibiotic treatment, vaccination stress, wet litter, empty feed pipeline, heat stress

Figure 2

## Biomim® Natural Growth Promoters for Piglets

### Application via feed



**Biomim® P.E.P. liquid** before weaning as a problem solver

Figure 3

Some bacteria strains being used as probiotics show direct immuno modulatory activities and are therefore called immunobiotics.

In BIOMIN® NGP-concept selected symbiotics have a synergistic action in supporting the intestinal micro-flora particularly in young animals and after antibiotic treatment has been administered.

### How to maintain a healthy gut?

Digestive stress is the main reason for unbalance of the intestinal flora, which is called dysbiosis. **Change of diet** often results in proliferation of pathogenic bacteria at the expense of beneficial bacteria due to specific supply of nutrients. This is not only the case in weaning piglets. Floral health of every animal species is jeopardised every time the energy content of the feed has been changed, for example when broilers switch from starter to grower feed. Antibiotic Growth Promoters have been used to control the gut micro-flora. However, there are safer and more sustainable ways to overcome these critical situations: On the one hand, **prebiotics**, a selective source of nutrients for positive bacteria including bifidobacteria and lactobacilli, support a well-balanced micro-flora. On the other hand, perfectly designed **phytogenic formulas**, which act like an effective spice in food, improve overall digestibility of nutrients. More digestive enzymes are released and more nutrients are absorbed in the small intestine, thus creating a minimized supply available for micro-organisms to utilize for growth in the colon.

So the primary mode of action of the effective phytogenic formulas being used in Biomim® NGP-concept is that **secretion of saliva and gastric juice** is enhanced. The activity of digestive **enzymes** is improved. This entails **optimised digestion; and also less substrate for pathogenic micro-organisms is available in the colon.**

### How to protect a healthy gut against invading pathogens?

Micro-organisms which are harmful to animals are ubiquitous. If the bacterial challenge exceeds a certain level, the health of the animal is in danger, as the animal alone cannot defend itself sufficiently. Therefore processing measures such as heat and pressure exposure to the feed is used to inactivate or decrease the population of microbial pathogens. Even if the feed is pelleted, there is always a risk of recontamination. In Biomim® NGP-concept selected organic acids and their salts have a bactericidal effect in the feed and are used as a preservative. Due to a special carrier the acids are released slowly and are therefore in the position to acidify the feed broth during digestion. Due to the pH decreasing action contributing to improved activity of digestive enzymes an impaired environment for pathogens is created. At the same time undissociated acids penetrate the cell wall of gram-negative bacteria in the small intestine. Once inside the cell, the acids dissociate. The hydrogen ion reduces the plasma pH of the

bacteria and the anion disrupts the DNA synthesis of the cell, thereby inhibiting bacterial proliferation of *E. coli* or *Salmonella* for instance, effectively.

Some of the selected acids have an additional positive effect on the growth of intestinal microvilli, which are important for nutrient absorption.

### Consequences of using Biomim® NGP-concept in practice

**The Natural Growth Promoters are part of BIOMIN'S VarioBiotic System**, the modular system, which is able to individually improve safety of the feed against digestive disorders. They can be considered as a constructive replacement of the AGP-module to protect the health of the gut.

All the components of Biomim® Natural Growth Promoters act together in a well-adjusted way to compete against unfavourable dietary factors including changes of feed composition, changes of digestibility and microbial contamination of the feed. They provoke improved utilisation of the energy deriving from the nutrients of the feed and are therefore called **pronutrients**. In figure 1, 2 and figure 3 the application of Biomim® NGPs is presented as an example in broiler and in pig production, respectively.

Summarizing, the use of Biomim® NGPs essentially contributes to the health of the animal's gut, which is shown in figure 4.

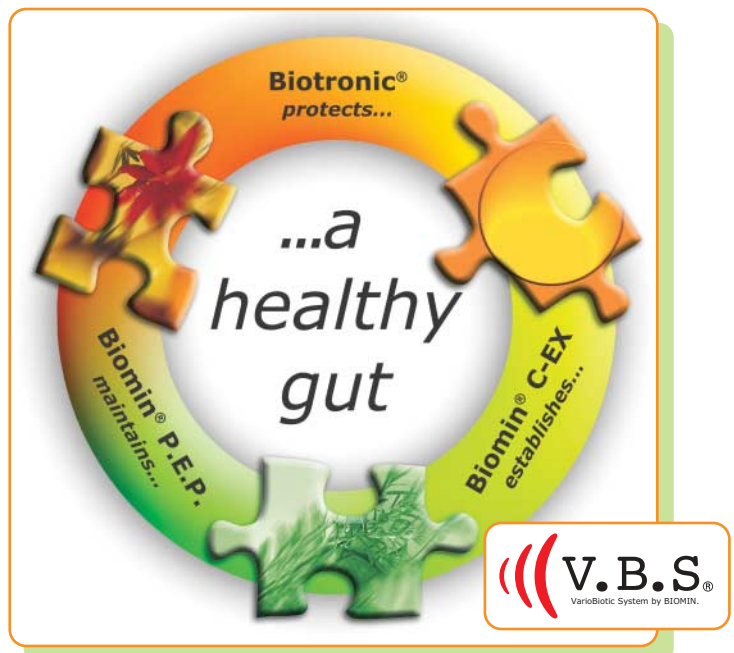


Figure 4: Biomim® Natural Growth Promoters

**As the animal's digestive system is the place where feed is transformed into performance, its health status and its functionality correlates directly with the economic results of the producer.**

The natural way.

**Biomim®**

# Health - the Growth Promoter of 2006!

The health of the intestinal tract is essential for its capacity to absorb nutrients. This energy is utilised for growth and reproduction.

The **BIOMIN Natural Growth Promoters** act together to provide the pre-conditions for optimum performance.

- **Biomim® C-EX** supports a well-balanced intestinal flora
- **Biomim® P.E.P.** optimises digestion
- **Biotronic®** acts against microbial contamination



**BIOMIN Natural Growth Promoters** have proved its efficacy and cost-effectiveness in various scientific trials and practical use, worldwide.

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**International Poultry Scientific Forum IPSF,**  
Atlanta, Georgia, USA, 23<sup>rd</sup> – 24<sup>th</sup> January 2006

**Australian Poultry Science Symposium APSS,**  
Sydney, Australia, 20<sup>th</sup> – 22<sup>nd</sup> February 2006

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## > Impressum

Newsletter is published by Biomim GmbH

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