POULTRY-FEED

DIRECT-FED MICROBIAL

POULTRY-FEED CONTAINS A COMBINATION OF CONCENTRATED VIABLE CULTURE PREPARATIONS OF *SACCHAROMYCES CEREVISIAE*, *BACILLUS LICHENIFORMIS*, *BACILLUS SUBTILIS* AND *ENTEROCOCCUS FAECIUM* FERMENTATION SOLUBLES.

WHY FEED BENEFICIAL BACTERIA TO POULTRY?

Beneficial bacteria play an important role in poultry by:

- Ensuring optimal pH conditions for the endogenous enzyme function, thereby facilitating an optimal environment for feed digestion;
- Producing growth factors that stimulate the growth of beneficial bacteria like Bifidobacteria;
- Protecting the gastrointestinal tract by producing antibacterial substances that inhibit the proliferation of pathogens;
- Stimulating normal gut development through the production of volatile fatty acids;
- Promoting gastrointestinal health by preventing the colonization of pathogens and stimulating the development of immunity.

BENEFITS OF POULTRY-FEED MOS (mannanoligosaccharides)

- Demonstrated to have greater pathogen binding capacity than leading MOS competitive product. Thus fewer pathogens colonize the gastrointestinal tract, thereby maintaining a healthier gut ecosystem;
- Beneficial modulation of the immune system, resulting in increased immunoglobulin synthesis, improved and more persistent titre levels post vaccination;
- Improved animal performance. Less energy spent repairing the gastrointestional tract and dealing with the stress induced by pathogenic proliferation;
- Improved gut health results in longer villi and thinner gastrointestinal membranes. This provides a greater surface area for nutrient absorption and less of a barrier to nutrients entering the blood flows from the gut.

SPECIFICATIONS

Description	Off-white / beige, free-flowing powder
Packaging	10, 20, 50kg pails
Ingredients	*Saccharomyces cerevisiae* fermentation solubles, *Bacillus licheniformis*, *Bacillus subtilis*, and *Enterococcus faecium*, fermentation products, sodium silico aluminate
Guaranteed Analysis	*Saccharomyces cerevisiae:* minimum 1,760 billion cells/kg Total Microbial Count: minimum 609 billion CFU/kg
Shelf Life	Up to 12 months
Storage and Handling	DO NOT FREEZE! Store in a cool dry environment out of direct sunlight. See MSDS.

Bionetix INTERNATIONAL *We work for nature*

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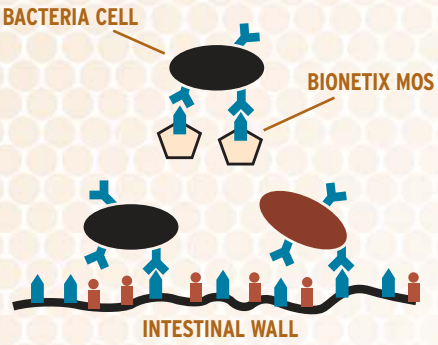


POULTRY-FEED consists of a probiotic derived from the cell wall of a single source of *Saccharomycees cerevisiae* (MOS). The polysaccharides obtained from the yeast cell wall consists of glucans, mannans, quitines, and galactans. The glucans are a group of d-glucose polymers with glycosidic linkages and 1,3 and 1,6 bonds. It also consists of probiotics containing *Bacillus subtillus*, *Bacillus licheniform* and *Enterococcus faecium*.

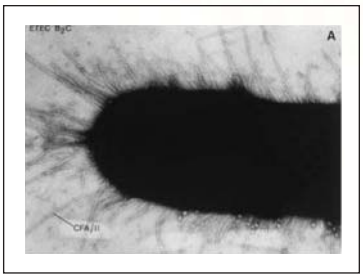
Enterococcus faecium is an important bacterium for the health of the lower GI tract. The beneficial bacteria help in pH modulation of the lower gastrointestinal tract, thereby creating an optimum environment for the endogenous enzymes to process feed efficiently. A further benefit is that these bacteria produce bacteriocins that inhibit the proliferation of *E. colli*, *Salmonella* and *Clostridia*.

Bacillus licheniformis are facultative anaerobes that produce a variety of enzymes including urease, protease, amylase, cellulase, and lipase activity.

Bacillus subtilis are aerobes that produce a variety of enzymes with very good protease, amylase, lipase, esterase activity with some xylanase and cellulase activity.

The enzymes produced by the *Bacillus* strains help to improve feed efficiency and conversion.

A number of enteric pathogens have mannose-binding fimbrae which are used to attach to the gut villi. POULTRY-FEED MOS acts as a decoy upon which these pathogens attach and are flushed from the GI tract.



Pathogenic E. coli with fimbrae for GI tract attachment

Binding of Pathogenic Bacteria by Different Sources of MOS
(J. Maurer, Univ. of Georgia, 2005)

Pathogen Strain	Sample 1	Sample 2	BIONETIX MOS
APEC*1 2716	-	-	-
APEC1 2964	-	+/-	+
APEC1 3687	+/-	+/-	-
APEC1 AOS1	-	-	-
APEC1 AOS6	+	+	+
APEC1 AOS9	+	+	+
APEC1 AOS13	-	-	+
APEC1 AOS15	-	-	-
S. enteritidis phage type 8	-	-	-
S. enteritidis phage type 13	-	-	+
S. enteritidis phage type 4	-	-	+/-
S. typhimurium2 SR11	-	-	+
All Strains	**3/12**	**4/12**	**7/12**

*APEC - Avian pathogenic *Escherichia coli*

INSTRUCTIONS FOR USE

Include POULTRY-FEED at a rate of:

- 1kg per ton of feed in starter diets;
- 0.5kg per ton of feed in grower diets;
- 0.5kg per ton of feed in finisher diets.

For further information on application, contact your BIONETIX technical representative.