



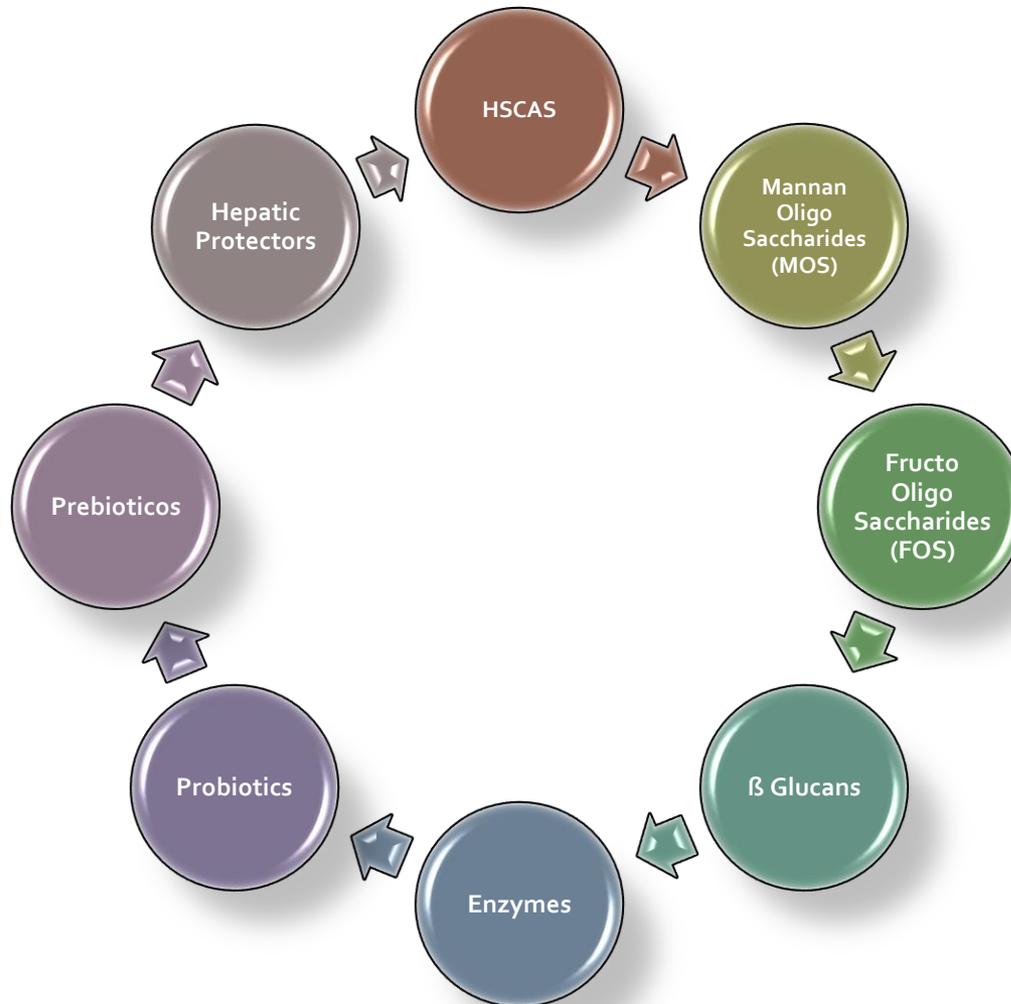
TOXIBOND[®] PRO

A new and integral concept to face the mycotoxin problem

¿What is Toxibond Pro?

- Is a last generation mycotoxin adsorbent.
- Combines different methods to reduce mycotoxin-related effects in farm animals.

TOXIBOND PRO

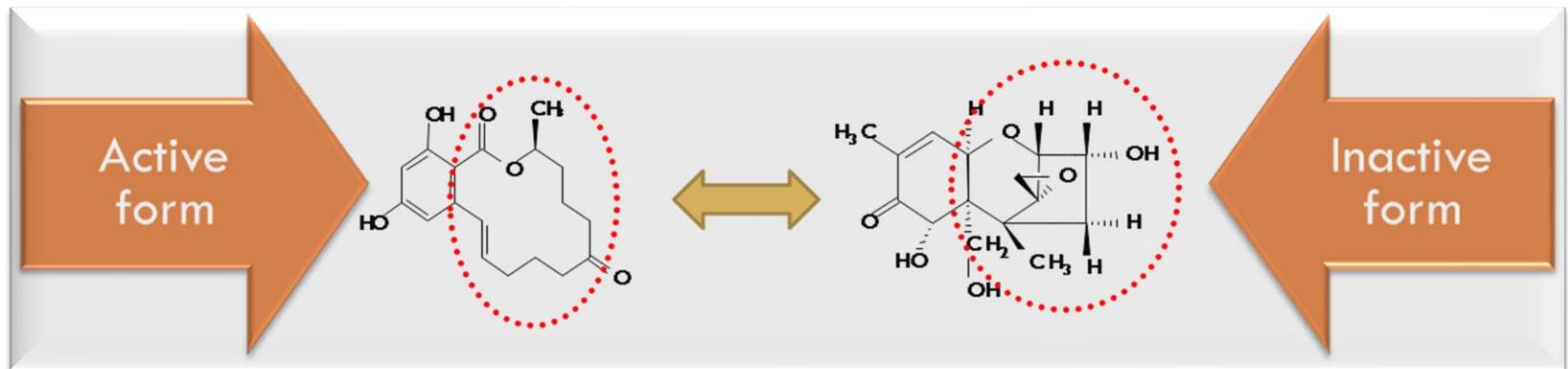


Toxibond Pro contains

- ✓ Hydrated and heat Activated Calcium and Sodium Aluminum Silicates (HSCAS)
- ✓ Cross Linked Polyvinyl Polypirrilidone (PVPP)
- ✓ Yeast (*Saccharomyces cerevisiae*)
- ✓ Mannan Oligo Saccharides (MOS)
- ✓ β Glucans
- ✓ Fructo Oligo Saccharides (FOS)
- ✓ Enzymes
- ✓ Probiotics
- ✓ Prebiotics
- ✓ Hepatic Detoxifiers

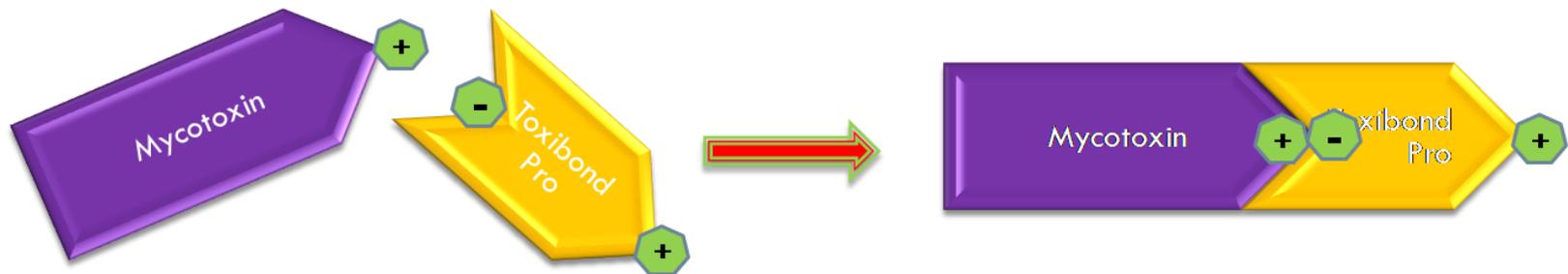
Toxibond Pro: Mode of Action

Toxibond[®] Pro confronts the problem of mycotoxins through five different strategies, combining the methods of its components.



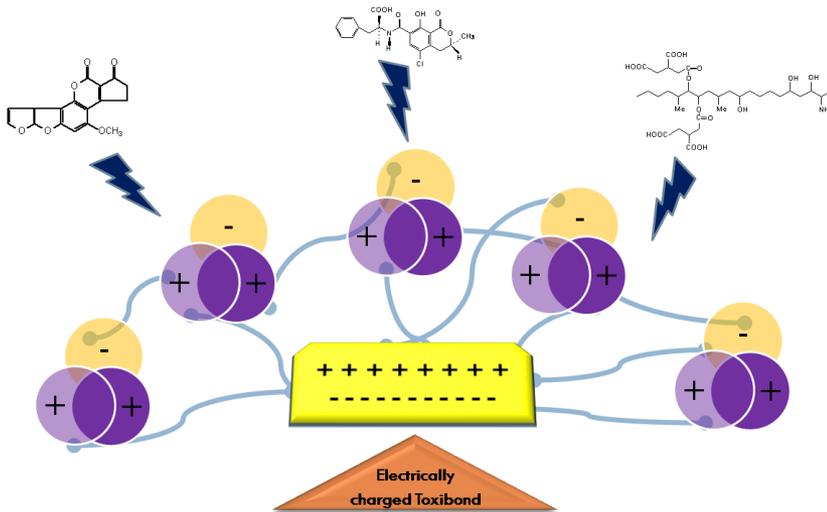
Strategy 1: Adsorption

Contains hydrated and heat activated calcium and sodium aluminum silicates (HSCAS) and PVPP to turn it into an excellent option to bond or to bind polar mycotoxins such as Aflatoxins and others of low polarity such as Ochratoxin, Zearalenone, D.O.N and Citrinin, among others.



Strategy1: Adsorption.

- Bind mycotoxins by means of electric force.
- Prevents mycotoxin absorption in the small intestine of animals.
- The capture is selective and stable.
- Captured mycotoxins are eliminated in the feces.



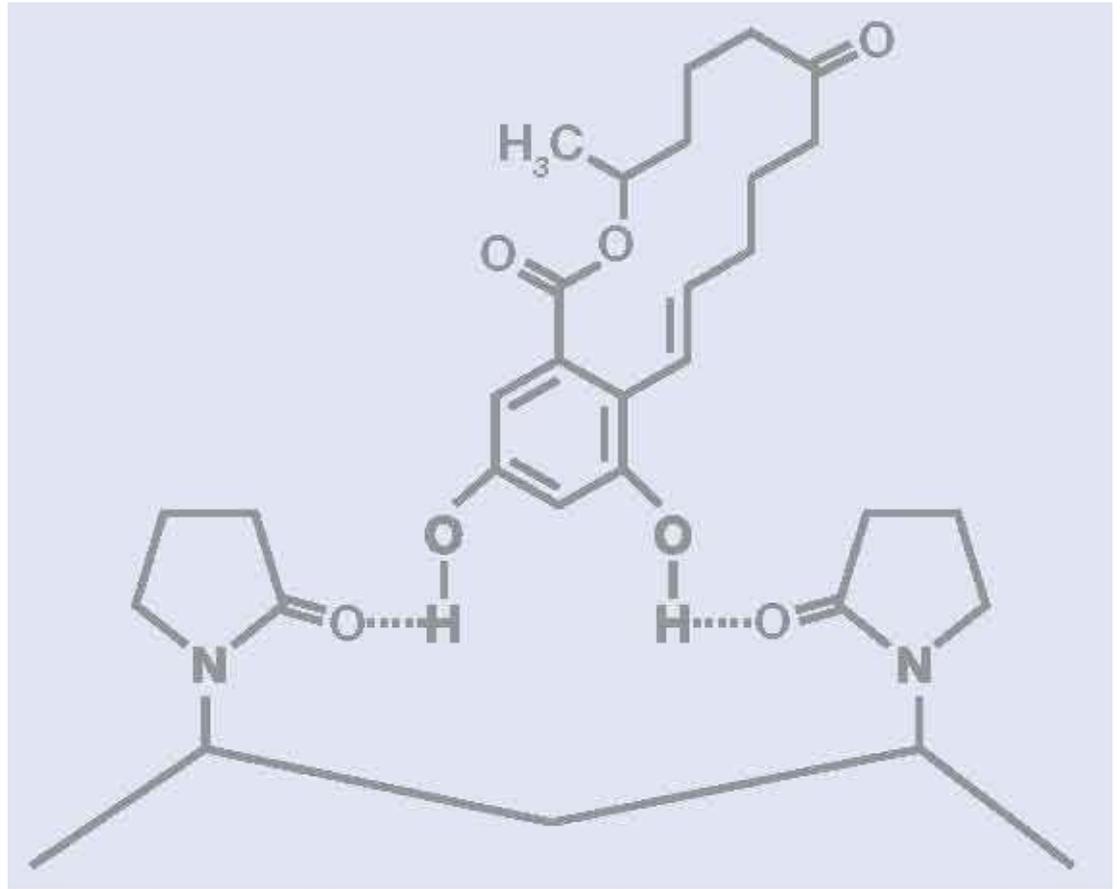
Strategy1: Adsorption.



- Esterified glucomannans extracted from the *Saccharomyces cerevisiae* cell walls contribute to provide large adsorption areas with different pore sizes.
- They may adsorb different types of mycotoxins regardless of their polarity.
- The yeast cellular wall provides many functional groups: carboxyl, hydroxyl, phosphate and amino capable of binding functional groups of mycotoxins

Mode of Action: Crossed Chain PVPP

•A series of compounds are adsorbed in acid or aqueous media by the formation of hydrogen links or as a result of dipolar interaction. These include mycotoxins like Aflatoxin B₁ and G₁, Zearalenone which are linked by the polymer.



Strategy 2: Immune System Improvement.

Toxibond Pro includes in its composition, a mixture of long chain carbohydrates obtained from *Saccharomyces cerevisiae*, stimulating the immune system; thus they defend the animal from the effects of mycotoxin induced immune depression.

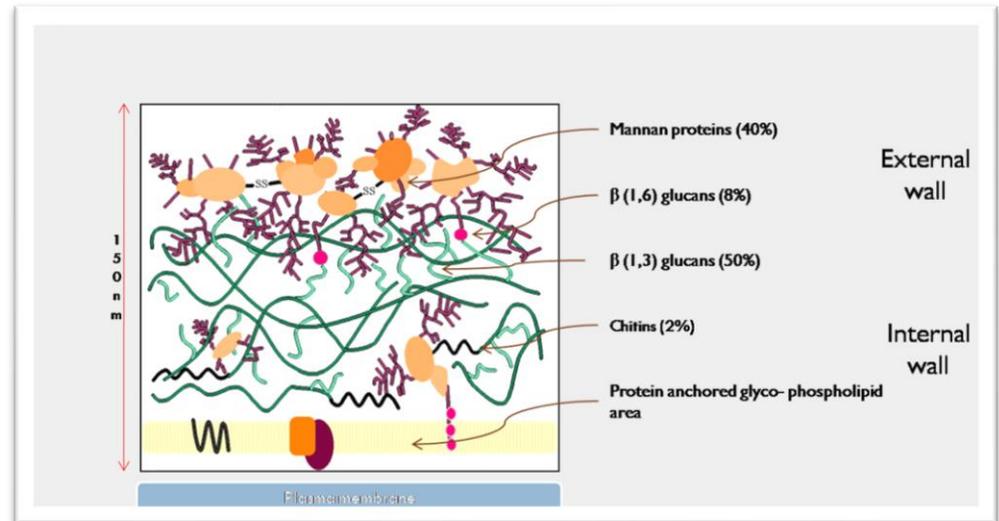
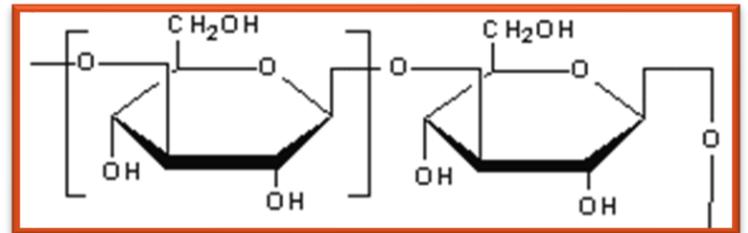


Figure: *Saccharomyces cerevisiae* cell wall structure

Strategy 2: Immune System Improvement.

Mannan oligosaccharides (M.O.S.) present in Toxibond Pro act as:

- A potent immune stimulator extracted from *Saccharomyces cerevisiae* yeast cell wall, which:
 - Binds pathogen bacteria such as *E. coli*, *Clostridium*, *Vibrio* and *Salmonella* in the gastro-intestinal tract.
 - Prevents colonization of pathogens in the gastro intestinal tract, and protects from the occurrence of new infections.



Strategy 2: Immune System Improvement.

- **β 1,3 - β 1,6 D-Glucans (BG-MOS) present in Toxibond Pro are:**
 - Polysaccharides activators of the Immune system.
 - Obtained after extraction from *Saccharomyces cerevisiae* cell wall.
 - Activate the non specific immunity and systems resistance against a broad range of pathogenic bacteria.

Strategy 3: Proliferation of benefic flora (Probiotics)

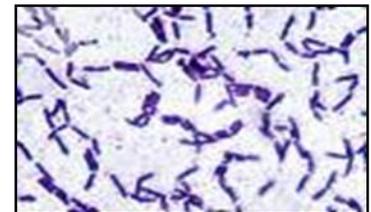
- Toxibond Pro Contains:
 - Four kinds of probiotics: *Lactobacillus acidophilus*, *Bifidobacterium longum*, *Bifidobacterium thermophilus*, and *Streptococcus faecium*; to improve passive immunization in the small intestine by producing lactic acid, reducing pH, and destroying pathogens.



Streptococcus faecium



Bifidobacterium thermophilus



Lactobacillus acidophilus

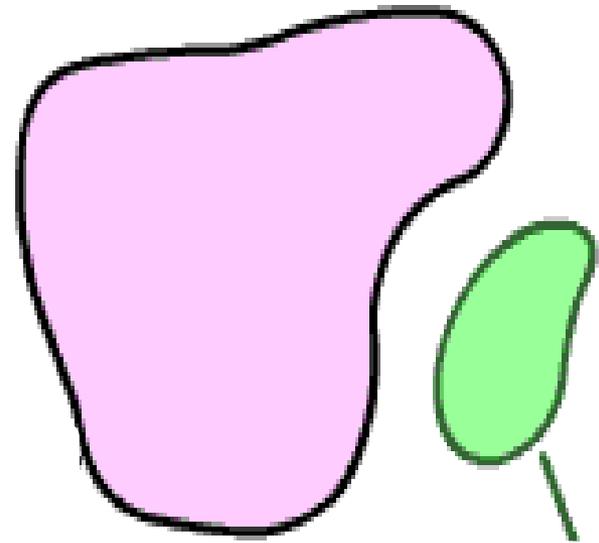
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Strategy 3: Proliferation of beneficial flora (probiotics)

• Additionally, Toxibond Pro Probiotics:

Compete for space with pathogens in the intestinal tract, rendering them unable to settle in the digestive tract and eliminating them through the feces.

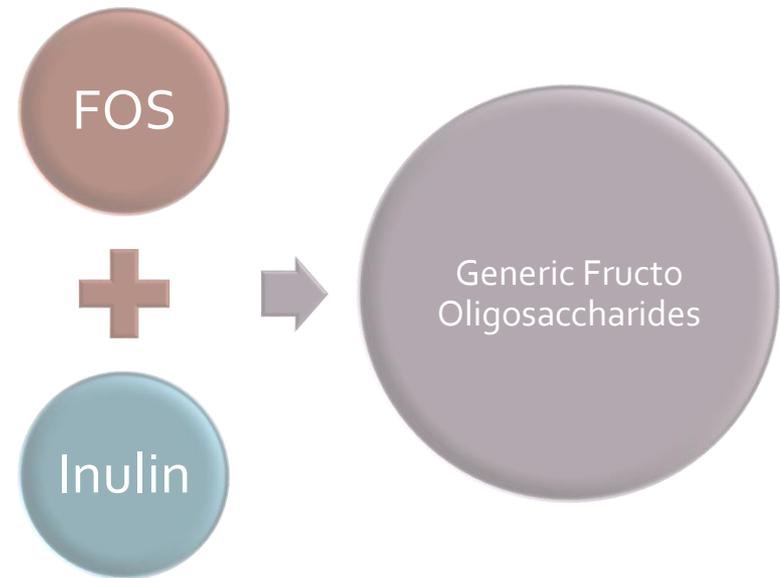
Bifidobacterium longum and *Bifidobacterium thermophilus* attack pathogens present in the intestine using the macrophage effect, hindering reproduction or adherence to the intestinal wall and eliminating them through the feces.



Strategy 3: Proliferation of beneficial flora (Prebiotics)

“Prebiotics are non-digestible food ingredients, which act selectively to favor the host, stimulating growth of a limited number of benefic bacteria in the colon, thus improving animal sanitary conditions.

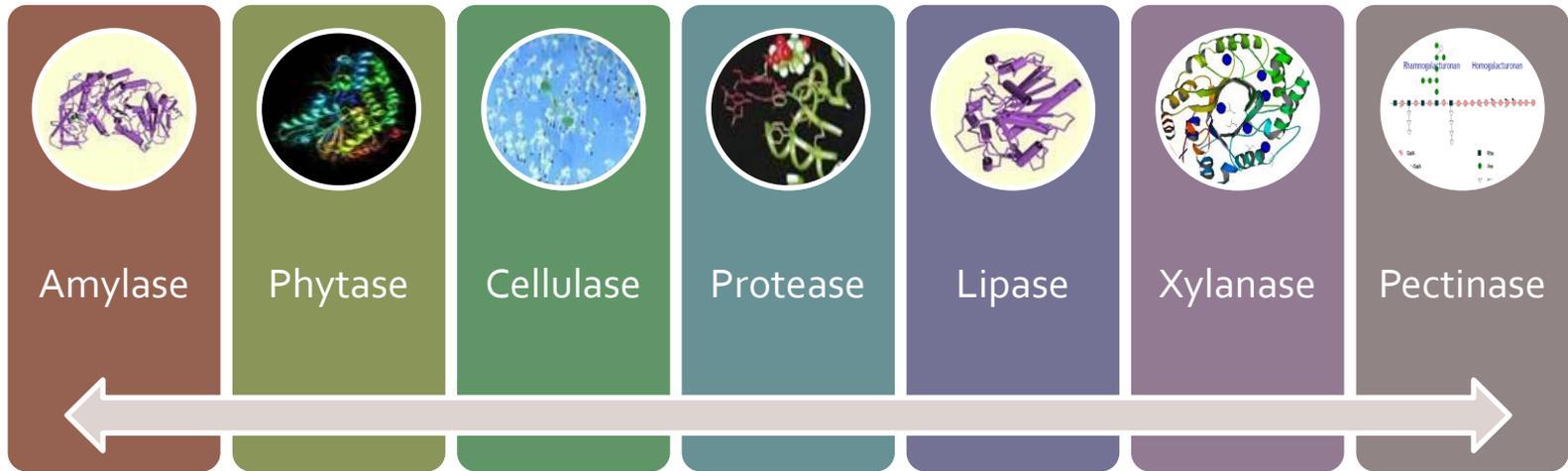
Toxibond Pro contains:
Inulin and Fructo Oligo Saccharides (F.O.S.), or structural long chain carbohydrates, extracted by fermentation of *Aspergillus niger* and *Aspergillus oryzae* fungi.



Strategy 3: Proliferation of Beneficial Flora (Prebiotics)

Fructo Oligo Saccharides and Inuline present in Toxibond Pro:

- Are not used by pathogens like : *E. coli*, *Clostridium*, etc.)
- Have Bifidogenic effects: fermentable in the large intestine by beneficial bacteria (Bifidobacterium)
- Stimulate growth of beneficial bacteria.
- Stabilize Intestinal microflora.
- Block large intestine wall receptors, hindering settlement of pathogen bacteria.
- Reinforce the Immune System.
- Improve resistance to infection.



STRATEGY 4: ENZYMATIC REINFORCEMENT

Toxibond Pro contains an enzymatic cocktail for the replacement of mycotoxin impaired enzymes.

Additionally it promotes enzyme production by taking part in the Biotransformation of some mycotoxins.

Our revolutionary strategy : 5

Hepatic detoxifier

Toxibond Pro contains:

Concentrate of Sillimarine (*Silybum marianum*)
and concentrate of artichoke (*Cynara scolymus*)
acting as:

- Hepatic protectors.
- Liver stimulants.
- Liver to gall bladder flow enhancer
- Antioxidant, (glutathione peroxidase enzyme production stimulant).
- Fat mobilizer.



Toxibond Pro in Poultry

- Using a Toxibond-Pro 0.5-1.5 Kg/1 Ton of feed in poultry has proven to be effective in controlling Polar and non-Polar mycotoxins.
- Testing performed in Israel on broilers showed advantage in body weight and feed consumption comparing to the controlled broilers without the Toxibond-Pro or with other toxibinders.

Toxibond Pro in Ruminants

- Using a Toxibond-Pro 15-30 g/animal/day dose in Dairy cattle has proven to be effective in controlling Polar and non-Polar mycotoxins.
- Testing performed in Colombia showed a 20% reduction in the incidence of metritis in cows consuming Toxibond Pro, 3 weeks before calving and two weeks after calving at a dose of 50 gram per animal per day.
- Field tests practiced in Israel produced a reduction in diarrheas and improvement in body condition of calves consuming a 30 grams dose of Toxibond Pro in their milk each day.