



# SafMannan

Predictable performance



## Safmannan®

Advanced management in the broiler industry

[phileo-lesaffre.com](http://phileo-lesaffre.com)



### Phileo

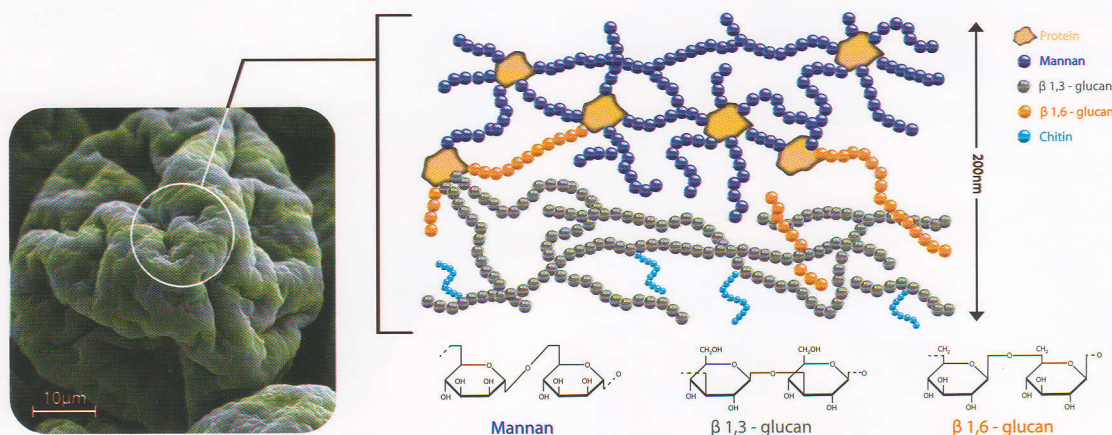
LESAFFRE ANIMAL CARE



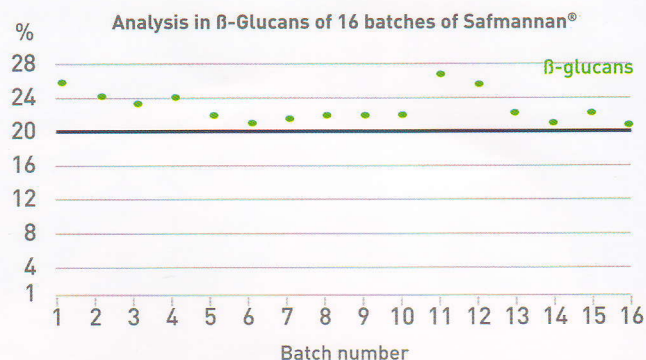
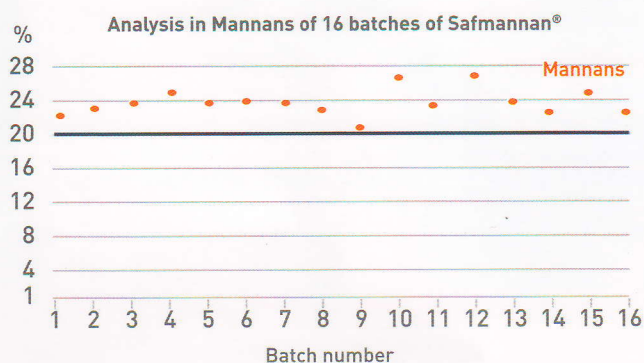
# SafMannan

## Premium yeast fraction

**Safmannan®** is a premium yeast fraction rich in mannan-oligosaccharides (MOS) and  $\beta$ -Glucans (1,3 and 1,6). **Safmannan®** is obtained by autolysis of *Saccharomyces cerevisiae* proprietary bakery strains. Batch-to-batch consistency and high concentrations of active ingredients enable **Safmannan®** to achieve repeatable excellent performance.



**Safmannan®** meets the highest standards of ingredients and consistency, yielding significantly better benefits than other yeast cell wall products.



### Yeast cell wall products

#### Origin and Process

##### BY-PRODUCT

- Non selected yeast strains
- Yeast cell wall come from trading

#### Composition

##### NON-UNIFORM PRODUCTS

- No guarantee of component composition
- Basic standard feed analysis: crude protein from 10 to 50%



### Safmannan®

##### SELECTED FRACTIONS

- Exclusive yeast strains
- Full manufacturing process controlled

##### BATCH-TO-BATCH CONSISTENCY

- Consistent concentration of Mannans  $\geq 20\%$
- Consistent concentration of  $\beta$ -Glucans  $\geq 20\%$

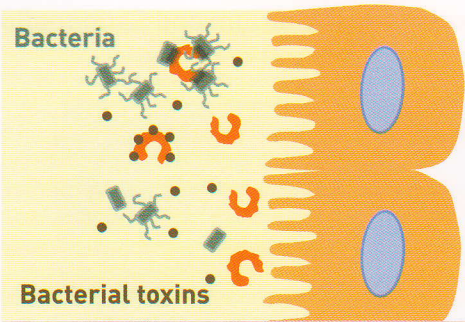
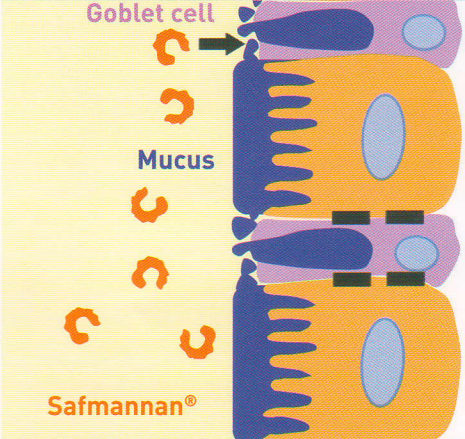
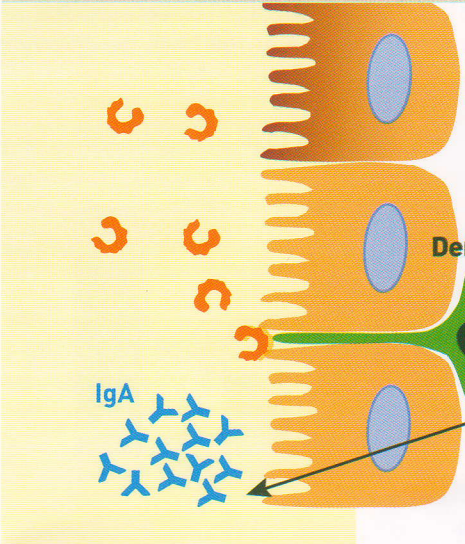




## Mode of action and key benefits

The benefits of **Safmannan®** have been demonstrated worldwide by recognised independent institutions. The main effects of **Safmannan®** in poultry are indicated below. **Safmannan®** helps to:

- Reduce pathogen pressure
- Promote gut function
- Support natural defences

	MODE OF ACTION	KEY BENEFITS
 <p>Bacteria</p> <p>Bacterial toxins</p>	<ul style="list-style-type: none"> <li>▶ Pathogen binding</li> <li>▶ Toxin adsorption</li> </ul>	<p>Reduction of pathogen pressure</p>
 <p>Goblet cell</p> <p>Mucus</p> <p>Safmannan®</p>	<ul style="list-style-type: none"> <li>▶ Increased number of goblet cells</li> <li>▶ Stronger intestinal mucosal barrier</li> <li>▶ Preserved tight junctions</li> <li>▶ Villi maintenance</li> </ul>	<p>Improvement of gut function</p>
 <p>IgA</p> <p>Dendritic cell</p> <p>Th1</p> <p>Th2</p> <p>Macrophage</p> <p>Cytotoxic T cell</p> <p>IgA and IgG</p>	<ul style="list-style-type: none"> <li>▶ Inflammatory mechanism modulation</li> <li>▶ Immune system activation</li> </ul>	<p>Immunomodulation and regulation of inflammation</p>

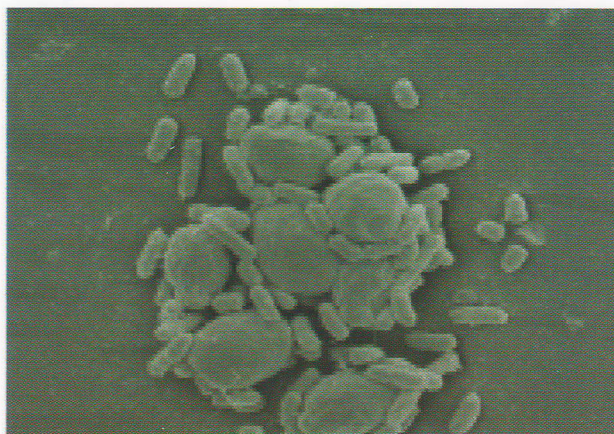


## Pathogen pressure reduction

Thanks to its high mannan-oligosaccharides content, **Safmannan®** is well known for its ability to bind a broad spectrum of major pathogens.

- **Safmannan® binds three of the most significant *Salmonella* serovars**

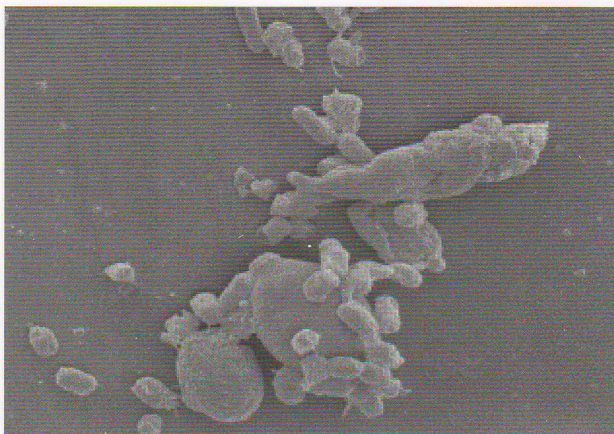
*In vitro* studies show that **Safmannan®** binds *Salmonella* without inactivating *Lactobacillus* strains. Numerous *Salmonella* strains were tested to evaluate **Safmannan®** binding properties and 81.3% of *Salmonella* strains were bound including *Salmonella* Enteritidis, *Salmonella* Typhimurium and *Salmonella* Infantis (Development of Animal Nutrition, 2010).



Safmannan® binds *Salmonella* (MEB picture x6500)  
Posadas *et al.*, 2014

- **Safmannan® binds *Escherichia coli* pathogens**

Of the various *Escherichia coli* strains tested, **Safmannan®** binds *E. coli* serogroup O2 (Development of Animal Nutrition, 2010).



Safmannan® binds *Escherichia coli* (MEB picture x6500)  
Posadas *et al.*, 2014

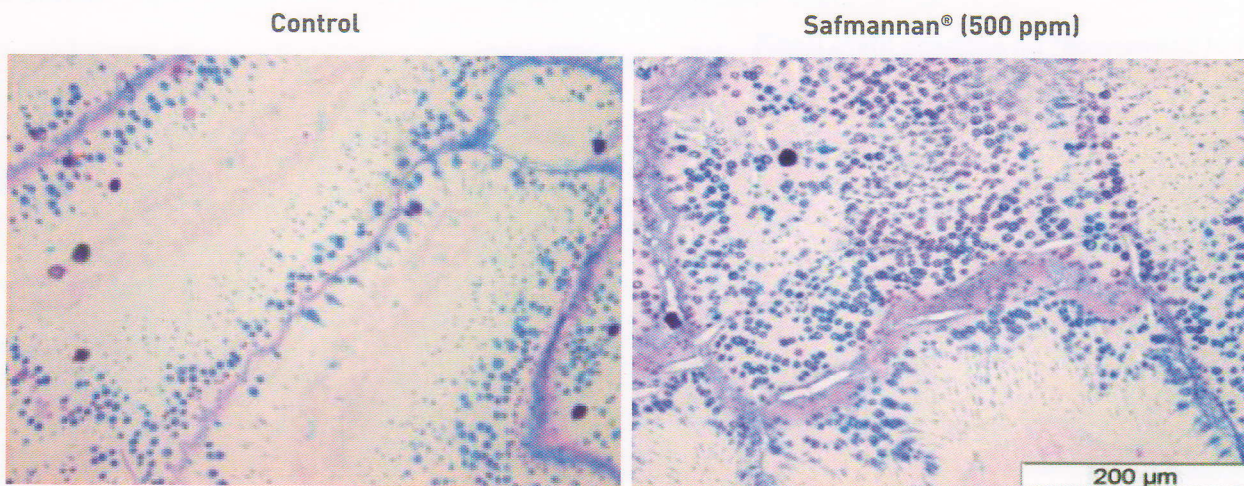


## Gut function improvement

**Safmannan®** is also recognised for its contribution to improving gut morphology and integrity. As a result, animals absorb nutrients more readily and have greater resistance to challenging environmental conditions.

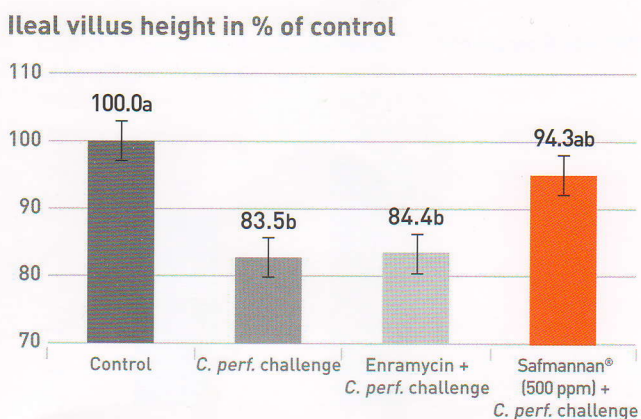
### • **Safmannan®** aids mucus secretion by increasing goblet cell numbers

**Safmannan®** contributes to an increase in goblet cell numbers, thereby promoting mucus secretion and strengthening the intestinal mucosal barrier against pathogens ( $p < 0.05$ ) (Morales *et al.*, 2010).



### • **Safmannan®** helps preserve gut development in challenging conditions

A recent study in broilers subjected to *Clostridium perfringens* challenge proved that **Safmannan®** maintained ileal villus height compared to enramycin treatment (Abudabos and Yehia, 2013).





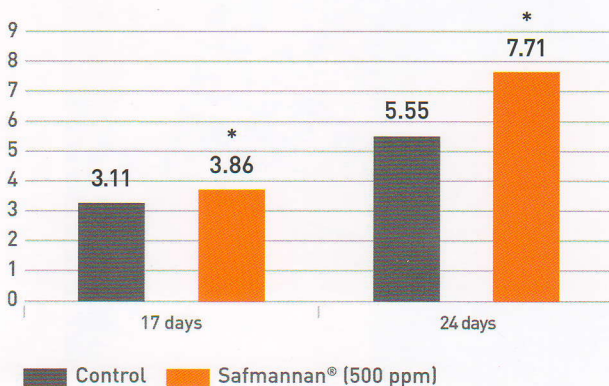
## Immunomodulation and regulation of inflammation

Feeding **Safmannan®** helps the animals' immune system become more reactive to challenge. Birds deal more efficiently with challenging conditions such as infections or heat stress (Świątkiewicz *et al.*, 2014).

### • **Safmannan®** enhances humoral immune response to challenges

This trial demonstrated that **Safmannan®** significantly increased antibody secretion in neonatal chicks, vaccinated at 10 days with a live vaccine against Newcastle disease virus (Gómez-Verduzco *et al.*, 2009).

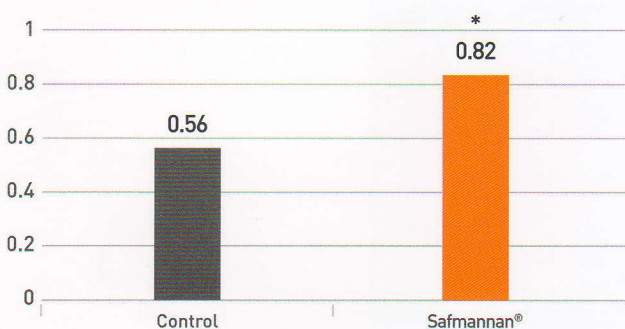
Effect of Safmannan® on antibody titers (log2) against NDV (HAI methodology)



### • **Safmannan®** improves cell-mediated immune response to disease

This study underlined **Safmannan®** ability to enhance the cell-mediated immune stage in birds, by measuring the basophilic hypersensitivity response of neonatal chicks vaccinated against Newcastle disease virus (Gómez-Verduzco *et al.*, 2009).

Effect of Safmannan® on basophilic hypersensitivity at 21 days (in mm)





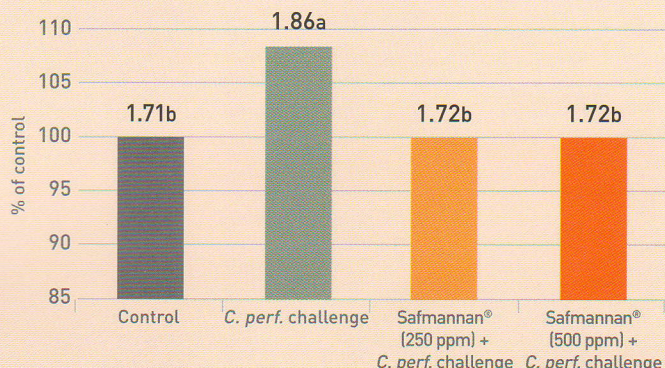
## Predictable performance

**Safmannan®** binds pathogens, helps improve gut health and modulates the immune system in poultry. The effects of yeast fraction are known to improve broiler performance in challenging conditions (Świątkiewicz *et al.*, 2014).

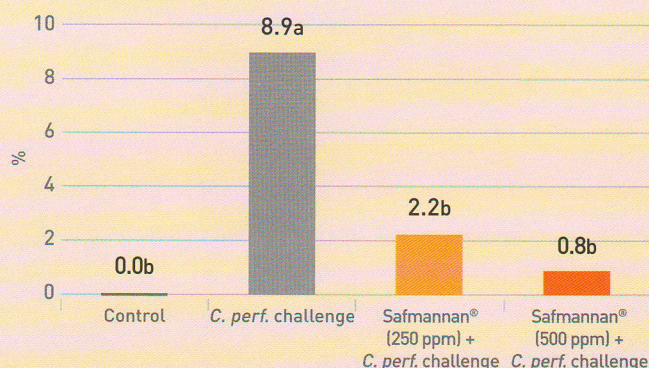
### • Effect of **Safmannan®** in broilers subjected to *Clostridium* challenge

This trial was conducted at Southern Poultry Research Inc., in 1,600 male Cobb broilers. Broilers were challenged with coccidia, followed by a three-day inoculation of *Clostridium perfringens*. **Safmannan®** significantly reduced mortality and necrotic lesions (data on file, 2008).

**Effect of Safmannan® on Feed Conversion Rate (FCR) of broilers at 35 days**



**Effect of Safmannan® on mortality**



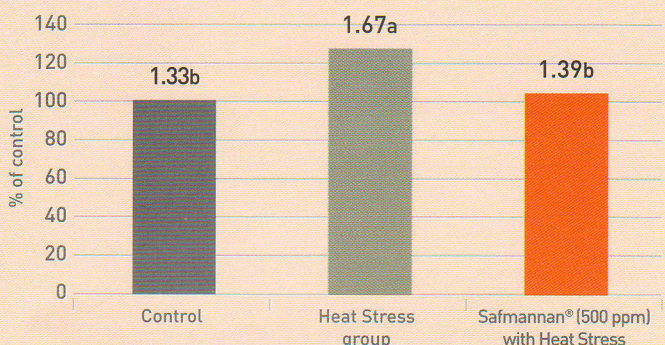
### • Effect of **Safmannan®** in broilers subjected to chronic heat stress

This trial was conducted in 270 one-day-old broilers (Ross 708, mixed sex).

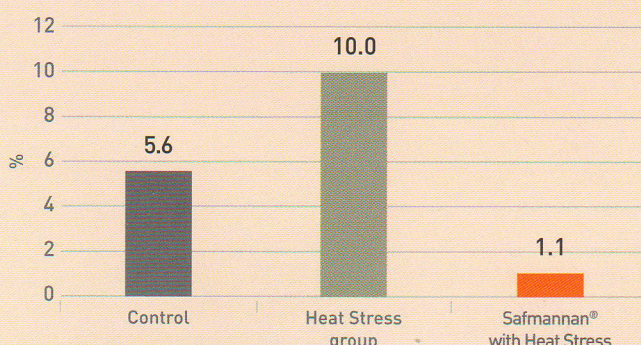
The **Safmannan®** group and Heat Stress group were subjected to chronic heat stress at  $35 \pm 2^\circ\text{C}$  ( $95.0 \pm 3.6^\circ\text{F}$ ) for 42 days. The temperature of Control group was set at  $35 \pm 2^\circ\text{C}$  ( $95.0 \pm 3.6^\circ\text{F}$ ) at day 1 and was decreased by  $3^\circ\text{C}$  ( $5.4^\circ\text{F}$ ) per week until it reached  $26 \pm 2^\circ\text{C}$  ( $78.8 \pm 3.6^\circ\text{F}$ ).

**Safmannan®** significantly improved growth performance and reduced mortality (Sohail *et al.*, 2012).

**Effect of Safmannan® on Feed Conversion Rate (FCR) of broilers at 42 days**



**Effect of Safmannan® on mortality**





# SafMannan

Predictable performance



- ✓ Support natural defences
- ✓ Reduce pathogen pressure
- ✓ Promote gut function

➤ Resistance      ➤ Performance

## Starter

## Grower

## Finisher

### Broilers

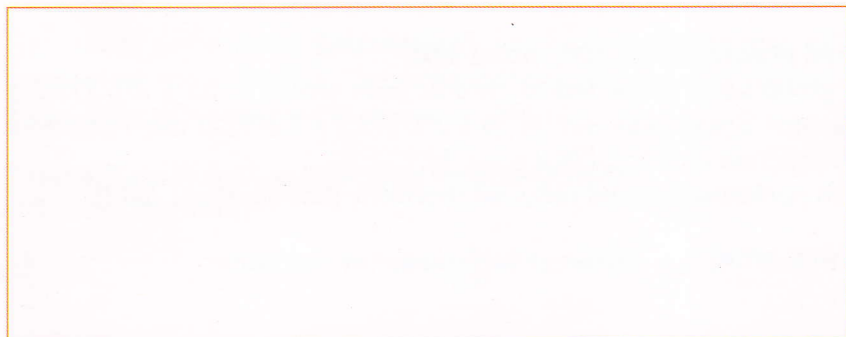
125 to 250 ppm\*

250 to 500 ppm

125 to 250 ppm

*\*For optimum growth and development of your broilers, please respect the maximum incorporation rate of 250 ppm in starter diet.*

For any questions, please contact your local sales representative.



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**Phileo**

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