SafMannan

Predictable performance

Safmannan®

Advanced management for the layer industry

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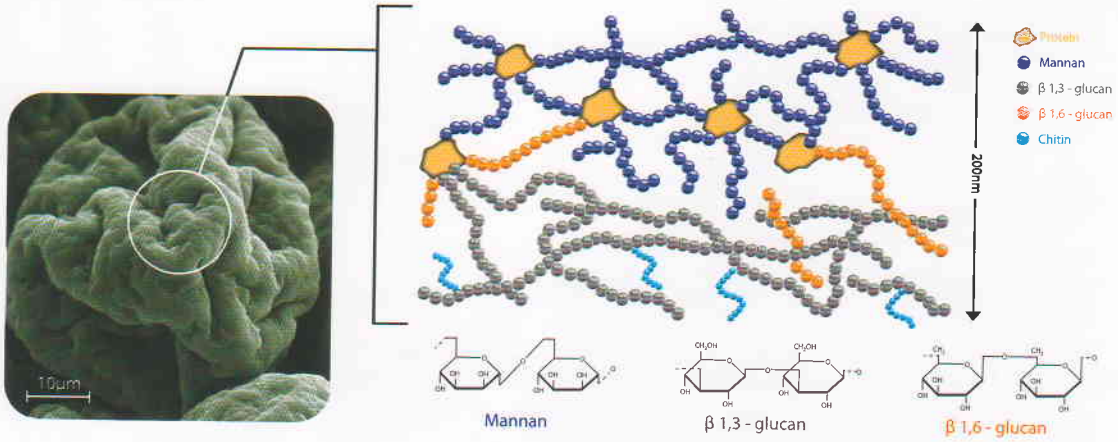
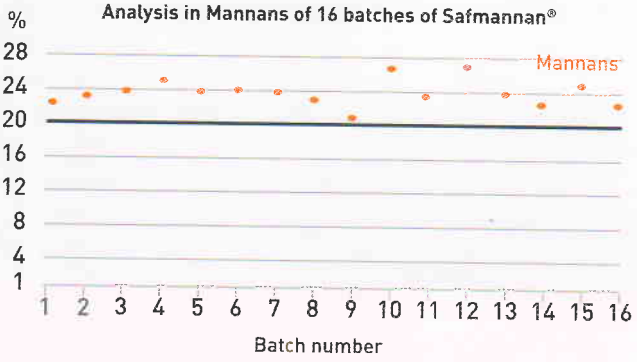
SafMannan

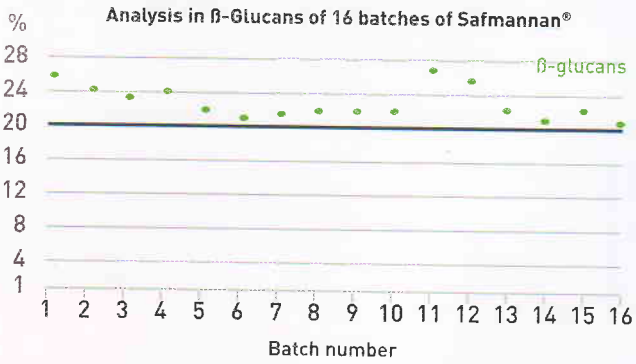
Premium yeast fraction

Safmannan® is a premium yeast fraction rich in mannan-oligosaccharides (MOS) and ß-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	**Safmannan®**
Origin and Process	BY-PRODUCT • Non selected yeast strains • Yeast cell wall come from trading	SELECTED FRACTIONS • Exclusive primary-grown yeast strains • Full manufacturing process controlled
Composition	NON-UNIFORM PRODUCTS • No guarantee of component composition • Basic standard feed analysis: crude protein from 10 to 50%	BATCH-TO-BATCH CONSISTENCY • Consistent concentration of Mannans ≥ 20% • Consistent concentration of ß-Glucans ≥ 20%

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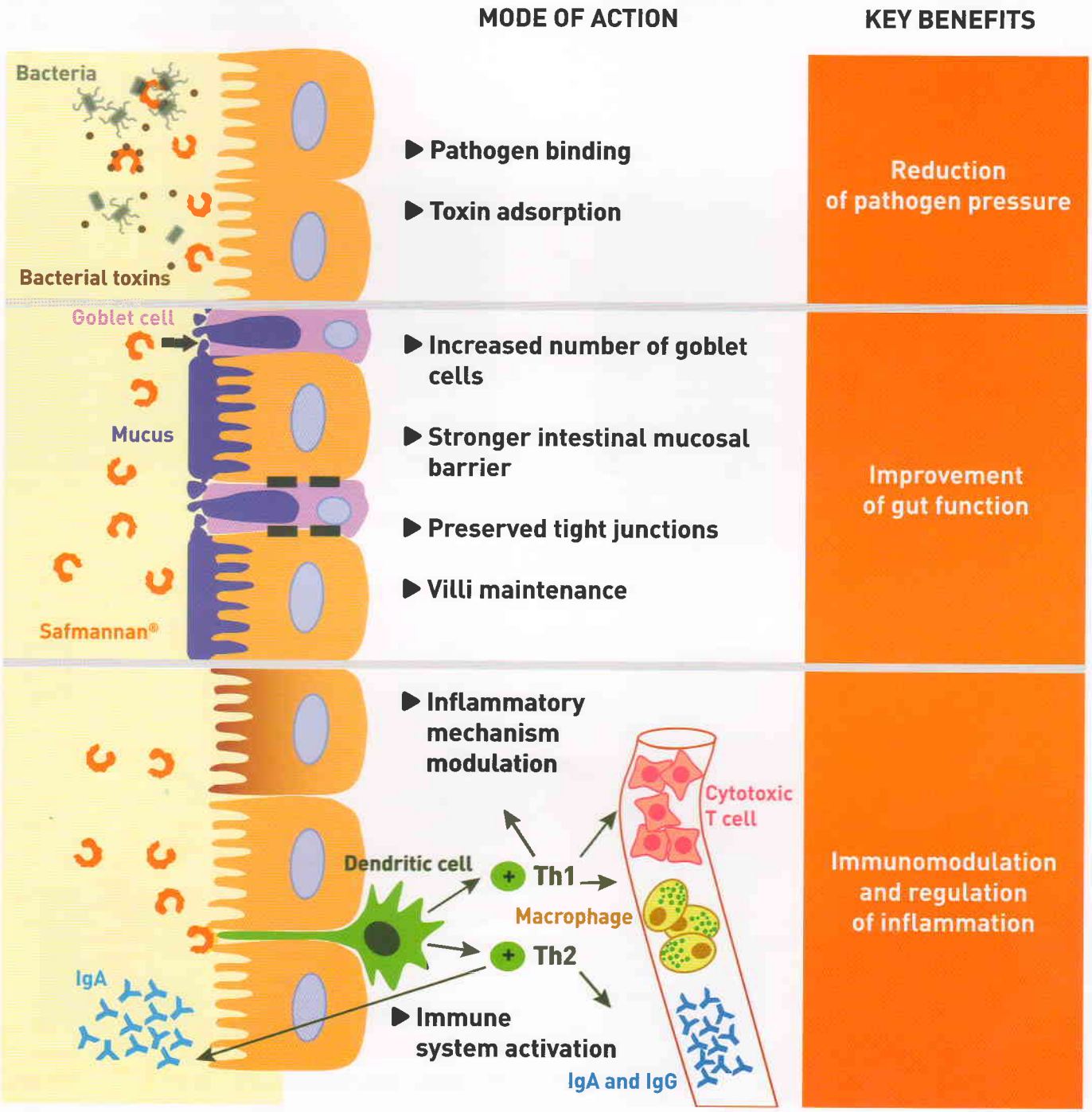
Mode of action and key benefits

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

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



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Pathogen pressure reduction

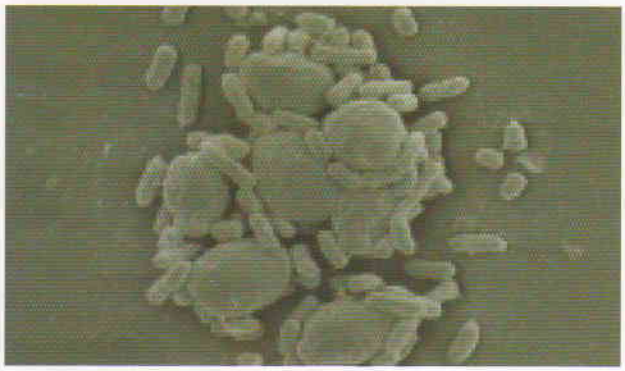
Due to its high mannan-oligosaccharides content, **Safmannan®** is well known for its ability to bind a broad spectrum of major pathogens.

• Safmannan® binds three of the most significant *Salmonella* serovars[1]

In vitro studies showed 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* Enteriditis, *Salmonella* Typhimurium and *Salmonella* Infantis.

• Safmannan® binds *Escherichia coli* pathogens[1]

Of the various *Escherichia coli* strains tested, **Safmannan®** binds *E. coli* serogroup 02.



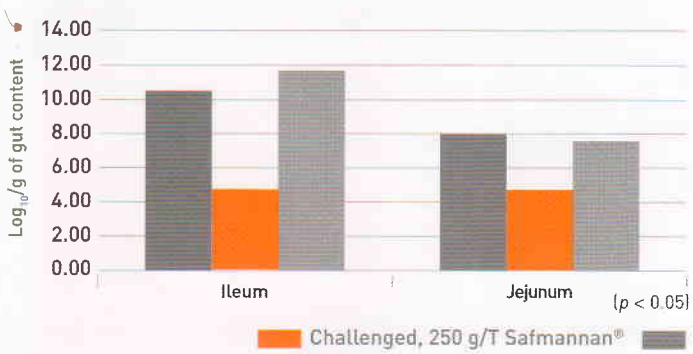
Safmannan® binds *Salmonella* (MEB picture x6500)[2]

Safmannan® binds *Escherichia coli* (MEB picture x 6500)[2]

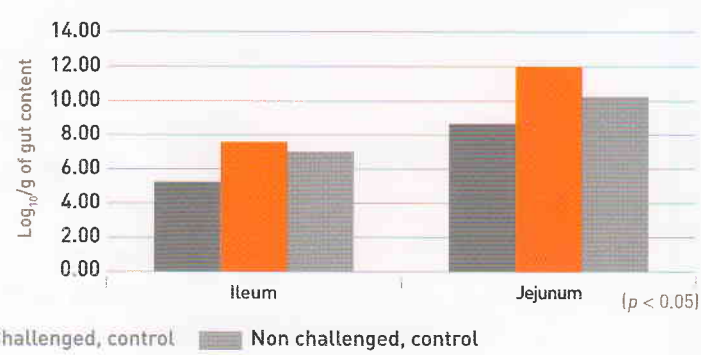
• Safmannan® helps to preserve gut microflora[3]

During an *in vivo* study conducted in 2015 at Shandong Agricultural University, China, layers were subjected to a density challenge (HD, 333 cm²/hen) and were treated with **Safmannan®**, from 12 till 29 weeks of age, at 250 g/T. **Safmannan®** aided in keeping a good balance in the gut microflora, by decreasing the *E.coli* population in the gut, and increasing the *Lactobacillus* population.

29 weeks – *E.coli*



29 weeks – *Lactobacillus*



Challenged, 250 g/T Safmannan® | Challenged, control | Non challenged, control

(1) Development of Animal Nutrition, 2010. Estudio de la capacidad de aglutinación de bacterias patógenas entéricas con Safmannan®. Internal report.
(2) Posadas *et al.*, 2014. Variations in the Binding of Gram-Positive and Gram-Negative Bacteria to Probiotics. ADSA-ASAS-CSAS Joint Annual Meeting.
(3) Shandong Agricultural University, 2015. Internal report.

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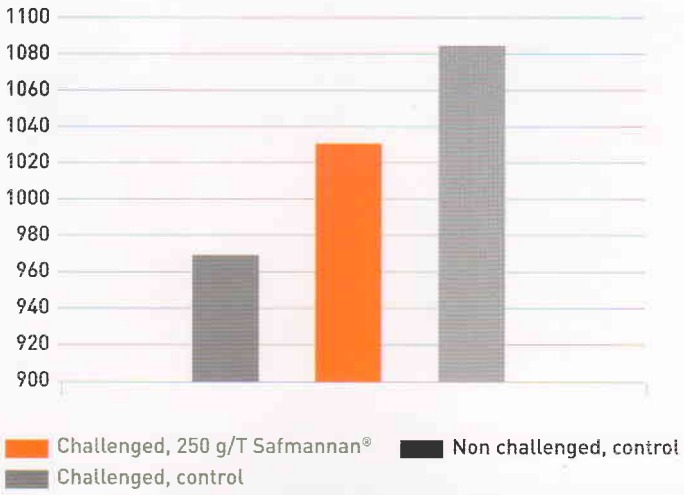
Gut function improvement

Safmannan® is also recognized 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.

During an *in vivo* study conducted in 2015 at Shandong Agricultural University, China, layers were subjected to a density challenge (HD, 333 cm²/hen) and were treated with **Safmannan®**, from 12 till 29 weeks of age, at 250 g/T. **Safmannan®** helped to maintain the integrity of the intestinal villi and reduced crypt depth, by decreasing gut inflammation.

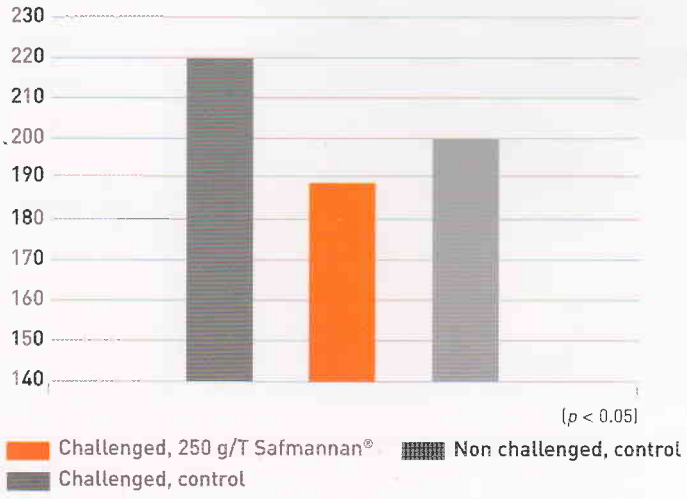
• Safmannan® helps to maintain the integrity of the intestinal villi[4]

Jejeunum villi length at 29 weeks old (µm)



• Safmannan® helps to reduce crypt depth, by decreasing gut inflammation[4]

Jejeunum crypt depth at 29 weeks old (µm)



(4) Shandong University, 2015. Internal report.

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Immunomodulation

Feeding **Safmannan®** helps the animals' immune system to become more reactive to challenge. Birds deal more efficiently with challenging conditions such as infections or heat stress[5].

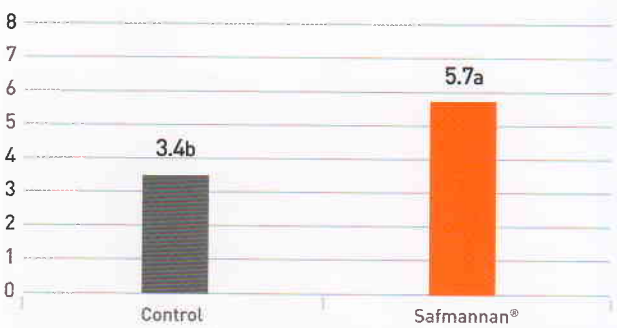
• Safmannan® enhances humoral immune response to challenges[6]

The below trial demonstrated that **Safmannan®** significantly increased antibody persistancy in laying hens (44 weeks of age) that were vaccinated against Newcastle disease (ND) virus and Low Pathogen Avian Influenza (LPAI) at the end of the rearing period, before being transferred to the laying site.

Antibodies titers against ND (log_2)

($p < 0.05$)

Antibodies titers against LPAI (log_2)



($p < 0.05$)

(5) Świątkiewicz *et al.*, 2014. Immunomodulatory efficacy of yeast cell products in poultry: a current review. World's Poultry Science Journal, Vol. 70.
(6) Shahir *et al.*, 2013. A comparison of the effects of commercial prebiotic on performance, egg quality and antibody titer of Avian Influenza and Newcastle disease in laying hens. Journal of Veterinary Research. 69, 1/79-84.

SafMannan

Predictable performance

Safmannan® binds pathogens, helps improve gut health and modulates the immune system in layer. The effects of yeast fraction are known to improve layer performance in challenging conditions[7].

• Effects of **Safmannan®** on layer's productive performances in early stage[7]

The below trial was conducted using 75 Hy-line layers from 21 week to 36 weeks of age. **Safmannan®** reduced feed consumption per g of egg (FCE). After a period of adaptation for the hens, **Safmannan®** helps to decrease the feed consumption.

	Egg production, %		FCE	
Periods	Control	Safmannan®, 250 g/T	Control	Safmannan®, 250 g/T
21-24 weeks	95.1	93.9	2.28	2.29
25-28 weeks	96.6	97.0	1.71	**1.65**
29-32 weeks	94.6	94.7	1.71	**1.67**
33-36 weeks	94.4	95.2	1.72	**1.65**

• Effects of **Safmannan®** on layer's productive performances in late stage[8]

The following trial was conducted using 225 Hy-line layers 54 weeks of age, treated with **Safmannan®** during 24 weeks. Laying hens were challenged with *Salmonella*. **Safmannan®** increased egg mass and significantly reduced FCE.

Salmonella challenge	Egg production, %	Egg weight, g	Egg mass, g/d	FCE
Safmannan® + challenge	**77.2**	63.65	**49.22***	**2.17***
Control + challenge	74.1	63.26	47.04	2.33

*$p < 0.10$

[7] Hashim *et al.*, effects of yeast cell wall on early production laying hen performance, J.Appl. Poult. Res., 2013, 22:797-797
[8] IRTA, Spain. Internal report.

SafMannan

Predictable performance

- ✔ Supports natural defenses
- ✔ Reduces pathogen pressure
- ✔ Promotes gut function

↑ Resistance ↑ Performance

Species	Safmannan®
Laying hens	250 g/T
Breeder hens	250 g/T

In case of high mortality, the dose may be occasionally increased from 2 to 4 kg/T during 7 to 10 days.

For any questions,
please contact your local sales representative.

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