

## ImmunoWall®, a food safety tool

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ICC Brazil is a market leader in yeast-based products for animal nutrition focused in intestinal integrity, health, and immune system modulation, seeking as result a better performance. The range of products is obtained from *Saccharomyces cerevisiae* yeast fermentation originating from ethanol production in Brazil. After the fermentation process, each co-product passes through different processing in order to release all its functional and nutritional characteristics as an additive. Since antibiotics as growth promoters are being banned in U.S. and several others countries and the demand of feed industry for natural alternatives is increasing, ICC can provide several solutions to each animal production and category.

ImmunoWall® is a yeast cell wall extract which is highly concentrated in  $\beta$ -glucans (> 35%), while still offering excellent levels of mannan-oligosaccharide, MOS (>19%). MOS is known for its capacity to agglutinate pathogens and it will prevent the colonization in the gut as it offers a binding site to harmful bacteria that possess type 1 fimbriae present in the intestinal tract. The  $\beta$ -glucans present in ImmunoWall® ( $\beta$ -1,3 and 1,6) will modulate the innate immune system response, resulting in greater protection for the intestinal cells and better response to the challenges.

Since consumers, distributors, and producers are concerned with food contamination and quality, especially for commercial eggs, food safety has been a pressing issue all over the world. *Salmonella* Enteritidis (SE) is known to colonize the ceca, and internal organs in commercial hens resulting in SE translocation to the ovary. As a consequence, SE can be found in eggs, by either ovarian or intestinal tract infection. Producers employ interventions to decrease egg contamination. The practicality and costs of intervention implementation are considerations when instituting a pathogen reduction program.

In order to study the ImmunoWall® effectiveness to mitigate intestinal and ovarian colonization by SE, a recent research trial conducted at *Southern Poultry Research Group* (Athens, GA – US) by Hofacre, et al. (“Effectiveness of yeast cell wall extract in commercial layers against intestinal and ovary colonization of *S. enteritidis*”, to be presented at IPSF 2017, Atlanta) was designed.

An extremely high SE challenge dose was required in this trial to establish sufficient transmission of the SE to the ovaries (>40% control birds were positive on ovarian culture vs. 33.3% in ImmunoWall®). ImmunoWall® was very effective reducing the prevalence of ceca infected (93.8% ImmunoWall® vs. 97.9% Control at 7 days, and 47.9% ImmunoWall® vs. 53.2% Control at 14 days), since a significant reduction in cecal colonization by SE occurred at 7 days (ImmunoWall® SE positive ceca had slightly more than  $10^2$  SE/gram vs. the Control at nearly  $10^3$  SE/gram of ceca content); resulting in corresponding reductions in ovarian prevalence and colonization.

It is important to point out that an obvious extension of the reduction in cecal colonization with the use of ImmunoWall® will be a decrease in the fecal contamination of the egg surface. After an egg is laid, it begins to cool and draw surface bacteria into the pores of the shell. Less SE contamination of the surface should result in less contamination of the egg interior. The use of ImmunoWall® can be an integral and viable part of a comprehensive SE intervention strategy; resulting in decreased ovarian colonization and environmental contamination.

The concern about the quality of ingredients and additives used in the animal feed is a global and irreversible trend, considering that the final consumer is becoming more

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*Adding value to nutrition*

aware of the relationship between "nutrition and health". ImmunoWall®, besides being a natural ingredient, is proven to be a successful solution to improve both gut health and food safety at low dosages, resulting in an excellent cost/benefit.

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