

Improving egg production with a novel postbiotic

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Recently, a novel category of feed additives has been introduced: postbiotics. The International Scientific Association for Probiotics and Prebiotics (ISAPP) defined postbiotics as a "preparation of inanimate microorganisms and/or their components that confer a health benefit on the host". Five possible modes of action of postbiotics have been postulated: (1) modulation of systemic metabolic responses; (2) modulation of resident microbiota; (3) modulation of local immune responses; (4) enhancement of epithelial barrier function; and (5) systemic signalling via the nervous system.

All over the world egg production is gaining popularity and importance, mainly fuelled by increasing egg consumption. Therefore, there are some challenges that producers need to overcome to fulfil consumer demands.

The most urgent challenges are related to eggshell quality and hen life span. Maintaining normal physiology and good health of the laying hen is essential to produce high-quality eggs for longer periods of time. Dietary interventions like the feeding of fermented feeds, fiber, probiotics, prebiotics, and postbiotics are acceptable means for influencing the gut microbiota and its metabolic activity.

In laying hens, inclusion of postbiotics in the diet to maintain/improve productivity and egg quality has been researched and has led to the development and commercialization of a new feed additive, AO-Biotics® EQE (Egg Quality Enhancer).

AO-Biotics® EQE is a fungal postbiotic produced using patent pending technology and specifically indicated to improve the number of sellable eggs and egg mass and to extend the productive lifespan of laying hens. De Juan et. al. (2021) studied the effects of the dietary inclusion of 50 grams of EQE per metric ton of feed on the performance and egg quality traits of hens from 15 to 43 weeks of age. In this study, the addition of EQE significantly reduced the incidence of shell-less eggs.

In addition, from 15 to 21 weeks of age, the feeding of EQE increased egg production by 9% and improved feed conversion ratio (FCR) by 8%. Motivated by these results, de Juan et. al. (2022) performed a second study extending the laying period of hens to 65 weeks of age. In agreement with previous observations, the inclusion of EQE improved all major production traits at the peak of production, including increasing egg mass by 2%, egg production and egg weight by 1%, and FCR by 2%.

Several field trials have subsequently evaluated the inclusion of EQE in the diets of commercial laying hens. In agreement with findings reported by de Juan et. al. (2021 and 2022), the inclusion of EQE under commercial conditions improved egg mass, the number of sellable eggs per hen, and the productive lifespan of the flock.

In eight field trials involving more than 400 thousand laying hens, the supplementation of the AO-derived postbiotic resulted in approximately 2% more egg mass, 3% improvement in egg production, and 3% more sellable egg per hen. On average, a reduction of 26% in the mortality of the flocks was also observed, demonstrating that EQE improved the productive lifespan of the laying hens.

Overall, field trial results were in line with findings found by de Juan et. al. (2021 and 2022) in controlled studies and support the proposition that EQE can contribute to improving eggshell quality, egg mass, and productive life span of laying hens.