PROMOTE® AOX™ Technical Report

AOX™ and Vitamin E for Poultry

Antioxidants are stable molecules that can neutralize unstable free radicals by donating unpaired electrons. Stressful events, such as birth, weaning, disease, high production, and heat stress can cause an imbalance between antioxidant status and free radicals, leading to oxidative stress. Oxidative stress can negatively impact the animal by suppressing the immune system, slowing growth and production, or causing fertility issues, liver damage, or muscle degeneration. Maintaining antioxidant balance is important to mitigate these negative effects.



Promote® AOX™ can be mixed easily into feed

Vitamin E is commonly used above the nutritionally recommended level in animal diets to support antioxidant balance, but it can be expensive. AOX is a combination of plant-based products that is less expensive than supplemental vitamin E and can be used to support animal performance in diets with the nutritionally recommended level of vitamin E.

AOX is used in feed for poultry, swine, dairy, and beef production. Research results indicate AOX products may benefit an animal through increased vitamin E status (shown as increased α-tocopherol, Figure 1) or increased resistance to oxidation (shown as a higher ORAC value, Figure2).

Vitamin E Increased in Egg Yolk*

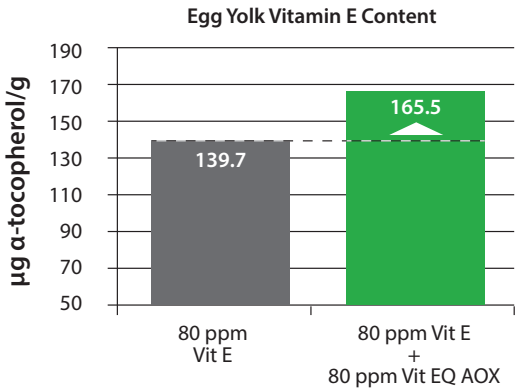

Figure 1: When chickens were fed AOX™, in addition to 80 ppm vitamin E, the amount of vitamin E (measured as alpha tocopherol) in the yolk of eggs was increased compared to chickens only fed 80 ppm vitamin E ($P<0.05$).
* Nutrient availability egg yolk model

AOX™ Affected ORAC of Serum

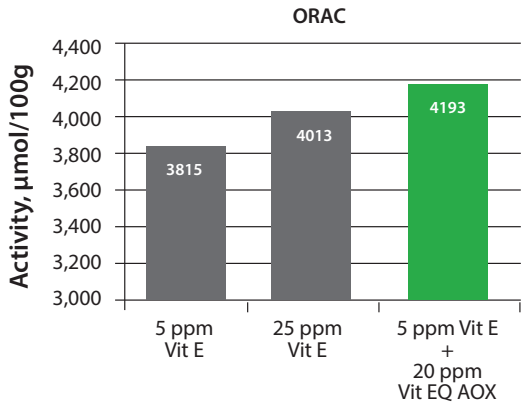

Figure 2: Oxygen radical absorbance capacity (ORAC) measures the capability for protection against oxidation. As the ORAC value increases, the amount of oxidation decreases. Blood samples were taken from pigs for ORAC measurement. Adding 20 ppm AOX50 to the diet with 5 ppm Vit E tended to increase ORAC ($P<0.10$).

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Trial 1 – AOX 50 in Broilers

Methods:

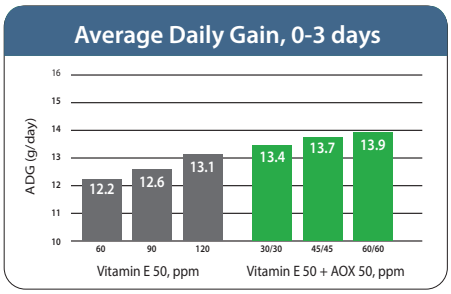
Treatments	Vit E 50 ppm	AOX 50 ppm
1	60	-
2	90	-
3	120	-
4	30	30
5	45	45
6	60	60

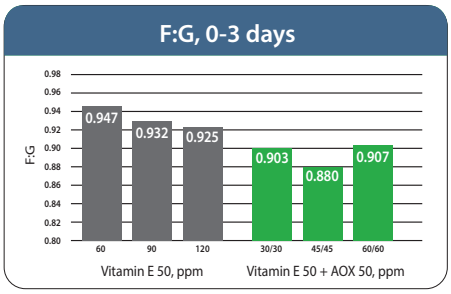
Trial Setup

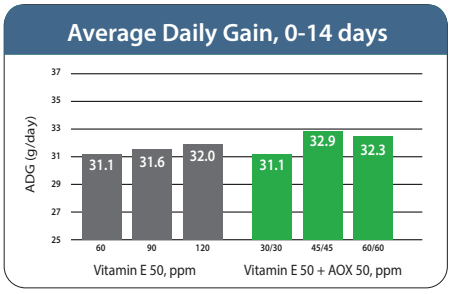
612 Male Ross 308 day-old chicks
17 Chickens/cage

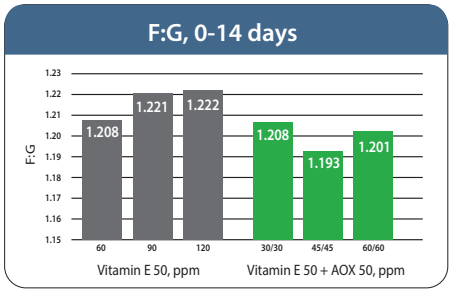
Results:

Birds fed AOX 50 had similar performance compared to birds fed elevated levels of vitamin E. Numerically, ADG and F:G were improved with AOX 50 day 0-3.









Trial 2 – AOX 50 in Layers

Methods:

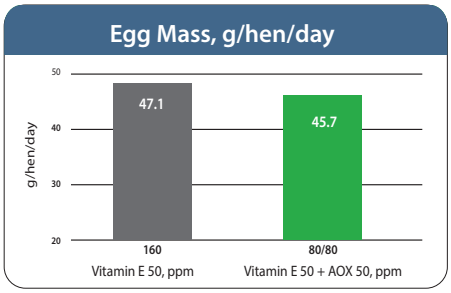
Treatments	Vit E 50 ppm	AOX 50 ppm
Control	160	-
AOX	80	80

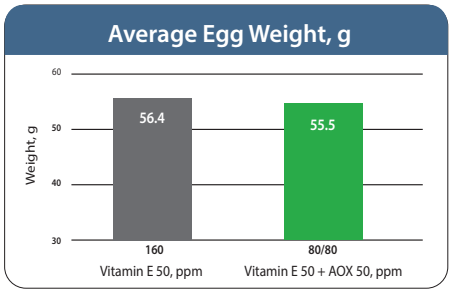
Trial Setup

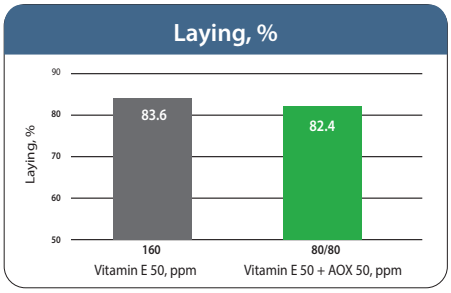
173 20 week-old female Cobb 500FF
28-30 birds/rep
Birds were on test for four weeks.

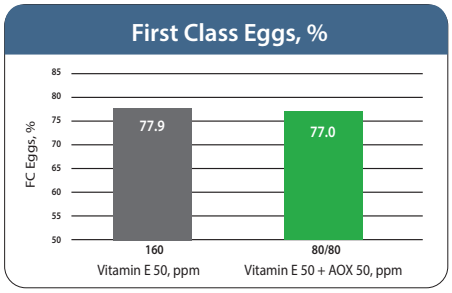
Results:

Using AOX 50, in addition to vitamin E, did not significantly affect layer performance.









Conclusion:

In these studies, using AOX products in addition to reduced vitamin E did not significantly affect performance.

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