

#### 4 ANIMAL NUTRITION AND FEEDING - Monogastrics

##### **Replacement effect of dietary Vitamin E with different source of polyphenols on growth performance and Vitamin E status in post-weaning piglets**

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Vitamin E has a vital role as an antioxidant and immunomodulator in animal species. Dietary supplementation with high levels of vitamin E is usually recommended in post-weaning piglets, when they show a decline in serum vitamin E concentration, reduced growth rate and susceptibility to stress. However, due to its synthetic nature and uneven distribution in tissues, the researchers continuously search for cost effective natural alternatives, and polyphenols, due to their antioxidant properties, could be such an alternative.

Therefore, the present study aims to investigate the partial replacement effect of vitamin E as suggested from additive company and literature in broiler with different sources of polyphenols on growth performance and serum vitamin E concentration in piglets.

Piglets ( $n = 350$ , body weight (BW) 7.20 kg), balanced for sex and BW were randomly assigned to seven experimental dietary groups: CON<sup>-</sup> (401 mg/kg vit E); CON<sup>+</sup> (175.8 mg/kg vit E); groups C, D, E, F and G containing each one 87.9 mg/kg vitamin E + products C (citrus and tannins) D (grape pip soluble), E (dry grape extract and carrier), F (freeze-dried melon juice and flesh, palm oil and microcrystalline cellulose), G (onion soluble and grape soluble) vitamin E equivalent, respectively. The trial lasted 35 days. Individual piglet weights at day 0 (d0) and day 35 (d35) and pen feed consumption were recorded for calculation of average daily gain (ADG) and feed conversion ratio (FCR). Blood samples were collected on d0 and d35 to determine serum vitamin E concentration.

Results showed that after 35 days of differentiated feeding, C group consumed less feed probably due to a taste not appreciated by piglets, exhibiting a lower ( $p < 0.05$ ) final body weight (15.04 kg) with a lower ( $p < 0.05$ ) ADG (0.223 kg) and worse FCR (2.1 kg/kg) compared to all other groups showing overlapping growth performances. No mortality was registered throughout the entire period. No effect of sex was found. Serum vitamin E concentration showed a general increase in all groups at d35 ( $p < 0.001$ ) and no effect of diet was detected; no clinical sign of vitamin E deficiency was noted in any piglet. In conclusion, the partial replacement of vitamin E with polyphenols results in unchanged growth performance among groups, excepting C group; considering vitamin E serum concentration, all integrations seem to be potentially reliable. Anyway, further research is needed to determine the effects also on other physiological indicators.