Original Communication

Lower Oral Doses of Micellized α-Tocopherol Compared to α-Tocopheryl Acetate in Feed Modify Fatty Acid Profiles and Improve Oxidative Status in Pigs

Ana Rey[1], Daniel Amazan[1], Gustavo Cordero[2], Alvaro Olivares[1], and Clemente J. López-Bote[1]

[1]Dpto. Producción Animal, Facultad de Veterinaria, Universidad Complutense de Madrid, Madrid, Spain
[2]PigChamp Pro Europa, Segovia, Spain

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Abstract: This study evaluated the effect of vitamin E supplementation source, and the dose given to sows or piglets, on the fatty acid profile of colostrum, milk, subcutaneous and intramuscular fat, and the oxidative status of piglets at 39 days of age. Sows (n = 10) were given 150 mg dl-α-tocopheryl acetate/d in feed, or 75 or 50 mg micellized-d-α-tocopherol/d in water from Day 103 of pregnancy. Weaning piglets from each group of sows (n = 7) received 3.33 mg dl-α-tocopheryl acetate/d in feed, or 1.7 mg micellized-d-α-tocopherol/d or 1.1 mg micellized-d-α-tocopherol/d in water for 14 days. Colostrum from sows supplemented with micellized-d-α-tocopherol had a lower proportion of C20:0 (P = 0.02), C18:4 n-3 (P = 0.03) and a higher C18:1 n-9 to C18:0 ratio than those given dl-α-tocopheryl acetate. Supplementation with micellized-d-α-tocopherol decreased the C18:0 proportion (P = 0.04) and the C18:1 n-9 to C18:0 ratio (P = 0.03) in milk, whereas the C18:1 n-7 proportion increased (P = 0.03) compared to dl-α-tocopheryl acetate. Composition was affected by the d-α-tocopherol dose. A similar trend to that observed in milk was observed in fatty acid composition in piglet fat. Piglets supplemented with micellized-d-α-tocopherol at low doses did not have different ferric reducing antioxidant power in muscle tissues (P = 0.31) than when they were supplemented with dl-α-tocopheryl acetate. Piglets given 1.7 mg micellized-d-α-tocopherol/d had lower oxidized glutathione than those given 1.1 mg/d (P = 0.0055). In conclusion, oral supplementation of sows (75 mg/d) and piglets (1.7 mg/d) with micellized natural vitamin E modified the fatty acid profile of piglet tissues and improved their oxidative status.

Key words: fatty acids, FRAP, GSSH, micellized natural α-tocopherol, sows and piglets

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