



FORTIFICATION OF RABBIT DIETS WITH VITAMIN E OR SELENIUM AFFECTS GROWTH PERFORMANCE, LIPID PEROXIDATION, OXIDATIVE STATUS AND IMMUNE RESPONSE IN GROWING RABBITS

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ABSTRACT



The objective of the present study was to examine the effects of supplemental dietary vitamin E (vit.E), organic selenium (Se) or vit.E+Se on growth performance, carcass characteristics, lipid peroxidation, antioxidative status and immune response in growing rabbits and to investigate their potential synergism on storage stability of rabbit meat. A total of 80 six weeks old male Californian rabbits were randomly divided into four experimental treatments (20 each): (1) control (basal diet without any supplementation of vit.E or Se); (2) vit.E (basal diet +250 mg α -tocopherol acetate/kg diet); (3) Se (basal diet +0.3 mg organic Se/kg diet); and (4) vit.E+Se (basal diet +250 mg α -tocopherol acetate/kg diet +0.3 mg organic Se/kg diet). All experimental treatments were provided from 6 to 12 weeks of age. Animals were provided with feed and water ad lib. Supplemental dietary vit.E, organic Se and vit.E+Se increased the final body weight, daily gain, hot carcass weight and dressing percentage, while feed conversion ratio was reduced in the growing rabbits. Dietary supplementation with vit.E and organic Se increased the content of vit.E and Se in raw rabbit meat by more than three –to five-folds, respectively ($P \leq 0.05$). Interestingly, dietary treatments decreased the index of lipid oxidation (thiobarbituric acid reactive substance, TBARS, values) in raw meat at 1, 3 and 6 days postmortem ($P \leq 0.05$). Also, the inclusion of vit.E plus organic Se in the rabbit diet markedly enhanced the serum glutathione peroxidase (GSH-Px) activity and total antioxidant capacity significantly being three times greater than the corresponding value of controls and, simultaneously, reduced the TBARS concentration in plasma to about 19% of the controls. The inclusion of vit.E, Se, or vit.E+Se in the growing rabbits' diets improved the humoral immune response compared to the controls ($P \leq 0.05$). Serum total cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides, total protein and albumen were not significantly affected by dietary treatments while serum globulins were significantly elevated. In conclusion, supplemental dietary vit.E, Se, or vit.E+Se enhanced growth performance, vit.E and Se content in raw meat, meat oxidative stability, serum antioxidative status and immune responsiveness in growing rabbits.