
**Abstract**

Ninety-six adult Leghorn chickens each had the flexor profundus tendon in each middle toe sharply divided in Zone II with immediate repair (pentobarbital, ketamine anesthesia). Animals were then randomly assigned to receive unsupplemented standard chick chow or the chow supplemented with vitamin A (150,000 IU/kg chow), Vitamin E (1000 IU/kg chow), or beta-carotene (90 mg/kg chow). Eight animals from each of the four groups were examined at 7, 30, or 45 days post repair. After sacrifice, in situ composite wound breaking strength was measured in the amputated toe by constant speed tensiometry. Vitamin A-supplemented animals demonstrated breaking strength more than double that of control at each postoperative test day, while those animals receiving supplemental Vitamin E had breaking strength less than half that of control at Day 7 and Day 45. These results are statistically significant. Tensiometry curves differed markedly at all time points among the groups: Vitamin A curves being broader, higher, and having more spikes. These differences in the tensiometry curves, both qualitative and quantitative, may be due to differences in intrinsic tendon healing or to differences in adhesion formation or a combination of both. beta-Carotene supplementation had modest effect. We conclude that supplemental dietary vitamin A increases the breaking strength of composite tendon wounds and that supplemental dietary vitamin E decreases it.