The relationship between selenium and vitamin E
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Both are essential nutrients with different, yet somewhat similar functions.

**Selenium**, an essential trace mineral, is part of the antioxidant enzyme – *glutathione peroxidase* that neutralizes hydrogen peroxide. Other roles include thyroid function, seleno-proteins and cell-mediated immunity.

**Alpha-tocopherol** (vitamin E) an essential vitamin is a non-enzymatic antioxidant. Primary function is to neutralize free-radicals created during metabolism. Other functions include gene expression, cell-mediated immunity and humoral immunity. Although a fat-soluble vitamin, there are no body stores for vitamin E like there is for vitamin A.

**A misconception is that an injection of selenium-vitamin E products improves both selenium and vitamin E status.**

Although selenium status is enhanced after injection, those products **do not** significantly improve vitamin E status. The quantity of vitamin E per mL is the same for all potencies of selenium (68 I.U./mL). If young animals are injected with Mu-Se, the amount of vitamin E would be five-times less than if Bo-Se had been injected due to the higher selenium potency of Mu-Se (1 vs 5 mg/mL). The form of vitamin E in the selenium products is alpha-tocopheryl acetate which has been shown to be much less bioavailable than alpha-tocopherol, the form found in VITAL E products. Newborn calves injected with Bo-Se had an improved selenium status, but no significant improvement in vitamin E status, while calves injected with VITAL E-A+D had significant improvements in vitamin E status (See Figures).

**Response of Calves to Injections of VITAL E-A+D, Bo-Se or Both on Vitamin E Status**

(Dahlen and Neville, North Dakota State U., 2011)

- Initial
- 48 hours

**Response of Calves to Injections of VITAL E-A+D, Bo-Se or Both on Selenium Status**

(Dahlen and Neville, North Dakota State U., 2011)

- Initial
- 48 hours