

DIETARY LIPIDS INFLUENCE MEASURES OF VITAMIN E STATUS

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There is considerable interest in the involvement of antioxidant vitamins with some of the major degenerative diseases of man. Measures which adequately represent their nutritional status in man are needed. Plasma tocopherol concentration is subject to considerable day to day variation and is therefore of limited interpretative value. On the other hand platelet tocopherol (expressed as μg per 10^9 cells) and plasma tocopherol adjusted by the plasma cholesterol concentration are reliable indices of vitamin E status.

In studies involving marmosets, pigs and humans, it has been found that there is a good correlation ($r=0.84$ $p<.001$) between plasma cholesterol and tocopherol over a wide range of dietary perturbations and plasma concentrations. Similarly there is a significant correlation between platelet tocopherol and plasma tocopherol adjusted for the plasma cholesterol concentration ($r = 0.59$, $p<.01$). As plasma cholesterol increases however, there is a reduction in the plasma tocopherol increase, and the lower ratio is reflected by a lower platelet concentration. Marmosets fed 0.5% cholesterol in the diet showed a significant reduction in platelet tocopherol. Sheep fat (12% supplement) had no influence on this platelet concentration, but sunflower seed oil supplement (with 400 ppm vit E) compensated for the diet cholesterol effect, and restored platelet tocopherol to control values.

This close relationship probably reflects the plasma lipoprotein levels and transport of both sterols, 30% tocopherol being found in LDL and 64% in HDL.

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