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**A comment on the evaluation of equilibrium constants for  
 $\alpha$ -tocopherol interactions with fatty acids by  
absorbance in the ultraviolet region\***

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Vitamin E, especially  $\alpha$ -tocopherol, has been considered to act as a biological antioxidant and/or a membrane stabilizer in the lipid core of biomembranes. It is of great importance, therefore, to study the interaction of  $\alpha$ -tocopherol and lipids for the verification of membrane stabilization by vitamin E.

Erin and coworkers measured the spectral changes of  $\alpha$ -tocopherol in ethanol solutions by the addition of a fatty acid (Erin, A.N., Spirin, M.M., Tabidze, L.V. and Kagan, V.E. (1984) *Biochim. Biophys. Acta* 774, 96–102). They calculated equilibrium constants for  $\alpha$ -tocopherol interactions with the fatty acid on the basis of the findings that the absorbance of  $\alpha$ -tocopherol in the 200-nm region decreased with an increase in the concentration of the fatty acid.

In the studies on vitamin E-related compounds, we applied their method and obtained the almost same results. During the course of the investigation, the question was raised whether their method provided the reliable constants in a solvent used. Thus, we reexamined their method.

There seems to be no theoretical basis for their assumption that the decrease in the absorption maxima at the 200-nm region indicates an  $\alpha$ -tocopherol interaction with a fatty acid.

A quantitative treatment of spectral data is valid only in the case of solutions which do not show a considerable absorbance. The solvent and fatty acids used in their work have considerable absorbance in the 200-nm region of the spectra.

On these basis, it is concluded that the ultraviolet method is inadequate, because it is affected by the absorption in the region of the solvent, ethanol, and fatty acids which they used.

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