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Formation of a Cytotiamine Complex with Fatty Acid in Dichloroethane*

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The formation of complexes between cytotiamine (CCT) and fatty acids (FA) (tetradecanoic acid, hexadecanoic acid, and octadecanoic acid) in 1,2-dichloroethane was studied by phase solubility analysis and ultraviolet absorption spectroscopy. The apparent stability constants of the equimolar complexes between CCT and FA were determined at 288, 298, and 310 K, and thermodynamically discussed. The complex formation ability of FA depended on the number of carbon atoms in FA, but the differences were small. The ability of 1-octadecanol was very small, and octadecanoic acid methyl ester had none. From these results CCT-FA were concluded to be hydrogen bonded complexes in which FA act as hydrogen donors. The complex formation reactions were exothermic and enthalpically controlled.

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