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Fluorometric Determination of Amino Acids and Proteins Utilizing a Copper(II) Catalyzed Reaction*

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Amino acids accelerated the copper(II)-catalyzed oxidation of di-2-pyridyl ketone hydrazone (DPKH) to form a fluorescent compound. With the use of this enhancement effect of catalysis, various amino acids (L-histidine, L-cysteine, L-glutamic acid, glycine, DL-serine, and L-arginine) could be determined by flow injection analysis. The detection limit of L-histidine was less than 2 pmol. On the contrary, proteins decreased the catalysis. Proteins were also determined through the utilization of this effect. In this determination, the addition of citric acid was found to be very effective. The detection limit of bovine serum albumin was less than 20 ng. The effect of protein upon the catalysis of copper(II) was considered to be ascribable to an inhibition of the coordination of DPKH to copper(II).

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