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SOME RECENT ADVANCES IN THE PURIFICATION OF MITOCHONDRIAL MONOAMINE* OXIDASE

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Beef mitochondrial amine oxidase has been purified as much as 58-fold. The purification procedure involved homogenization of the mitochondria, treatment with Triton X-100, ammonium sulfate fractionation, absorption on alumina Cγ and chromatography on DEAE-cellulose. The results were variable but some of the preparations were water-soluble. Examination of the most purified enzyme in the analytical ultracentrifuge disclosed one component and the sedimentation coefficient was determined to be 10.2 (uncorrected).

Using the purified enzyme, it was shown that copper is a prosthetic group of the enzyme. The copper was shown to be essential for activity since known copper chelating agents inhibited the enzyme. The most purified enzyme contained about 0.07% copper. Digestion of the enzyme with proteases yielded a flavin-like peptide. The absorption and fluorescence properties of the peptide resembled that reported for flavin. In addition, the fluorescence studies of the enzymatic digest disclosed the presence of a substance with fluorescence properties similar to that found in the plasma amine oxidase, which was reported to be pyridoxal-phosphate.

The spectrum of the enzyme disclosed the presence of an absorption maximum at 410 mμ, a plateau at about 450 mμ and a shoulder at about 480 mμ. The enzyme is yellow in color, in contrast to the plasma amine oxidase, which is pink.

* This interesting work was brought to the attention of the Organizing Committee after the symposium and was added in proof.