ProductInformation

L-AMINO ACID OXIDASE
from Crotalus adamanteus
Sigma Prod. Nos. A3016, A9253, A9378

CAS NUMBER: 9000-89-9
E.C. NO. 1.4.3.2

PHYSICAL DESCRIPTION:

A9253 (crude venom) yellow powder, minimum 0.3 U/mg solid
A9378 (more purified) yellow to amber suspension (prepared according to Wellner & Meister to the point just prior to crystallization)[2]; minimum, 4 U/mg protein
A3016 yellow powder, approx. 60% protein (Biuret); 1-3 U/mg protein

STORAGE / STABILITY AS SUPPLIED:

A9253 and A3016 should be stored dry and frozen. The suspension A9378 should NOT be frozen, but stored at 2-8°C. These products will lose about 15% activity per year in storage.

SOLUBILITY / SOLUTION STABILITY:

These products will dissolve at 1 mg protein/mL in water to give clear solutions. The enzyme is stable in solution for months when refrigerated (0-4°C). Substrate and absence of oxygen protect activity at elevated temperatures. The enzyme may be reversibly inactivated by incubation in phosphate buffer pH 7.5 at 38°C[4]. Freezing the aqueous solution results in loss of activity, which may be reversible.[5,6] One assay method uses Tris-HCl buffer, pH 7.5 at 37°C, with L-phenylalanine as substrate, catalase to prevent the α-keto acid from being destroyed by hydrogen peroxide.[6]

PROPERTIES:

Structure: Molecular Weight is 130,000 d; this is a glycoprotein containing about 2-5% carbohydrate, including sialic acid. It consists of two different subunits of approximately 70,000. There are two FAD molecules per molecule of holoenzyme. Electrophoresis indicated the presence of at least three isozymes, and perhaps as many as 20.[3,6]

Optimum pH: approximately 7.5[2]; Sigma assays the enzyme at pH 6.5, based on literature references.[6,7,8] (The protocol is available on request from Technical Service.)

GENERAL REMARKS:

"LAAO" is a flavoprotein that catalyzes the oxidative deamination of L-amino acids to the corresponding α-keto acids. It is found in microorganisms and in animal tissue, especially in kidney and liver. It occurs also in many snake venoms.[1]

REFERENCES:

1. *Merck Index*, 12th ed., #435 (1996).
2. Wellner, D. & Meister, A., *J. Biol. Chem.*, 235, 2013 (1960).
3. DeKok, A. & Rawitch, A.B., *Biochemistry*, 8, 1405 (1969).
4. Wellner, D. *Biochemistry*, 5 1585 (1966).
5. Curti, B. et al., *J. Biol. Chem.*, 243, 2306 (1968).
6. Wellner, D., *Methods In Enzymology*, XVIIB, 593-600 (1971).
7. Knox, W.E. and Pitt, B.M., *J Biol. Chem.*, 225, 675-688 (1957).
8. La Du and Michael, The Virginian. *A Journal of the VA State Soc. of the American Med. Techs*, Vol. 3 (2), pp. 4-65.

REVIEW: Meister & Wellner, THE ENZYMES, 7, 609-634, Boyer et al., Eds. (Academic Press, NY, 1963).