3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Lysine Oxidase
from *Trichoderma viride*

Product N umber **L 6150**
Storage Temperature 2-8 °C

Product Description

Enzyme Commission (EC) Number: 1.4.3.14
CAS Number: 70132-14-8
Molecular Weight: 116 kDa[1]
pI: 4.35[1]
Extinction Coefficients: E^{mM} = 247 (277 nm), 24 (388 nm), 22 (466 nm), and 19 (490 nm)[1]
Synonym: L-lysine:oxygen oxidoreductase (deaminating)

Lysine oxidase from *Trichoderma viride* is a dimer containing two identical subunits of approximately 56 kDa. The enzyme contains 1 mole of FAD bound to each subunit and the prosthetic flavin group is released from the enzyme protein under acidic conditions. The secondary structure of lysine oxidase contains
13% α helix and 33% β- sheets.[1,2]

The enzyme catalyzes the following reaction:

L-Lysine + O_2 = H_2O →
6-amino-2-oxohexanoate + NH_3 + H_2O_2

The enzyme reacts, more slowly, with L-ornithine, L-phenylalanine, L-arginine, L-tyrosine, and L-histidine. The following K_m values have been reported: L-lysine (0.04 mM), L-ornithine(0.44 mM), and L-phenylalanine (14 mM).

D-Lysine diamines and ω-amino acids such as ε-aminocaproate cannot be utilized as substrates. L-Lysine hydroxamate is utilized as a substrate, but ε-N-acetyl-L-Lysine is not. Lysine oxidase is inhibited by p-chloromercuribenzoate and $HgCl_2$.

L-lysine oxidase is useful for the enzymatic determination of L-lysine. It is also been reported to contain antitumor activity.[2,3]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This enzyme is soluble in water (5 mg/ml), yielding a clear solution.

References

1. Kusakabe, H., et al., A new antitumor enzyme, L-lysine α-oxidase from *Trichoderma viride*. Purification and enzymological properties. J. Biol. Chem., **255(3)**, 976-981 (1980).
2. Hafner, E.W.; and Wellner, D., Demonstration of imino acids as products of the reactions catalyzed by D- and L-amino acids oxidases. Proc. Natl. Acad. Sci. USA, **68(5)**, 987-991 (1971).
3. Lukasheva, E.V. and Berezov, T.T., L-lysine α-oxidase: physiochemical and biological properties. Biochemistry (Mosc.), **67(10)**, 1152-1158 (2002).

TMG/CRF 12/03