Product Information

Tyrosinase

From mushroom

T3824

Product Description

CAS Registry Number: 9002-10-2

EC (Enzyme Commission) Number: 1.14.18.1

Synonyms: Monophenol monooxygenase; Polyphenol oxidase; Monophenol, dihydroxyphenylalanine:oxygen oxidoreductase;

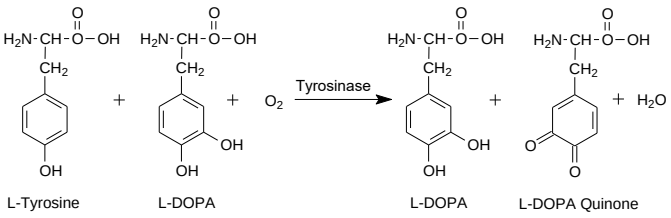
Molecular mass:[1] 119.5 kDa (electrophoresis)

Isoelectric point (pI):[2] 4.7–5

pH optimum: 6–7

Tyrosinase is a copper-containing oxidase which has activity on both catechols and cresol. Tyrosinase is responsible for browning reactions. Tyrosinase is reported to have two binding sites for aromatic substrates and a different binding site for oxygen, the copper-containing site.[3]

Overall Reaction



K_M for L-Tyrosine:[4] 0.5 mM

K_M for L-DOPA:[4] 1.5 mM

Catechol acts as a suicide substrate for tyrosinase, causing irreversible inactivation during catechol oxidation.[5] Tyrosinase is also inhibited by compounds that complex with copper, such as benzoic acid and cyanide. Benzoic acid inhibition is competitive with catechol. Cyanide inhibition is competitive with oxygen and noncompetitive with catechol.[3]

This product is isolated from the mushroom species *Agaricus bisporus*.[6] The product was dialyzed against deionized water prior to lyophilization. This enzyme is also assayed for polyphenol oxidase and catechol oxidase activities.

Activity: ≥1,000 units/mg solid (tyrosinase activity)

Unit Definition: One unit will cause an increase in A_{280} of 0.001 per minute at pH 6.5 at 25 °C, in a 3 mL reaction mix containing L-tyrosine.

Several publications,[7] theses[8-12] and dissertations[13-17] have cited use of product T3824 in their research.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Tyrosinase is soluble (2 mg/mL) in 50 mM potassium phosphate buffer, pH 6.5, yielding a clear brown solution.

Storage/Stability

When stored at –20 °C, the product loses <5% activity per year. If stored at 37 °C, 40-60% activity is lost in 7 days.[18]

Solutions retain activity for several days at 4-8 °C and for several weeks frozen at –20 °C.[6] The enzyme is rapidly denatured in 1% SDS solution.[1] Tyrosinase dissociates into subunits in saturated urea and is completely inactivated. While the dissociation is reversible, the inactivation is not.[6]

References

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