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Product Information

Microsomal Epoxide Hydrolase
human, recombinant
expressed in human lymphoblast cell line

Catalog Number **E7404**
Storage Temperature –70 °C

EC 3.3.2.3
Synonyms: mEH; *trans*-Stilbene Oxide Hydrolase; Xenobiotic Epoxide Hydrolase; Epoxide Hydratase

Product Description

This recombinant, microsomal epoxide hydrolase is expressed in a human lymphoblast cell line. A natively expressed cytochrome P450 (7-ethoxyresorufin O-deethylase activity) is present at relatively low levels in the cell line used.

Epoxide hydrolase functions to render epoxides less chemically reactive. Two human forms are involved in this process, microsomal epoxide hydrolase and soluble epoxide hydrolase. The microsomal enzyme, like the cytochromes P450, functions in the biotransformation of a variety of drugs and toxic substances, typically acting upon epoxide intermediates produced by cytochrome P450. It has been implicated in participating in the metabolic activation of polycyclic aromatic hydrocarbon carcinogens. Although typically expressed in the liver, it is also present at significant levels in other tissues such as the adrenal gland. There is evidence for the role of soluble epoxide hydrolase in blood pressure regulation.

The product is supplied in a solution of 100 mM potassium phosphate, pH 7.4.

Oxidoreductase Activity:
Determined as cytochrome c reductase activity. The reaction is initiated by the addition of 0.1 mg/ml protein to 1.0 ml of reaction mixture containing 1.3 mM NADP, 3.3 mM glucose 6-phosphate, 0.4 unit/ml glucose 6-phosphate dehydrogenase, 3.3 mM $MgCl_2$, and 0.95 mg/ml cytochrome c in 0.25 M potassium phosphate buffer, pH 7.4, at 37 °C. The absorbance change at 550 nm is recorded as a function of time. An extinction coefficient for reduced (ferrous) cytochrome c at 550 nm of 19.6 mM^{-1} cm^{-1} was used to calculate the reductase activity. One unit will reduce 1 nanomole of cytochrome c per minute at pH 7.4 at 37 °C.

Epoxide Hydrolase Activity:
Determined as styrene oxide hydrolase activity. The reaction is initiated by the addition of 0.2 mg/ml of protein to 0.25 ml of reaction mixture containing 0.5 mM styrene oxide in 100 mM Tris buffer, pH 9.0, at 37 °C for 10 minutes. One unit will produce 1 picomole of styrene glycol per minute at pH 9.0 at 37 °C.

Native Cytochrome P450 Activity:
Determined as 7-ethoxyresorufin O-deethylase activity. Incubations were conducted at 0.25 mg/ml of protein with 1.3 mM NADP, 3.3 mM glucose 6-phosphate, 0.4 unit/ml glucose 6-phosphate dehydrogenase, and 1.3 mM $MgCl_2$ in 0.1 M potassium phosphate buffer, pH 7.4, for 30 minutes. One unit will produce 1 picomole of resorufin per minute at pH 7.4 at 37 °C.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

1. Quickly thaw at 37 °C using a water bath. Keep on ice until ready to use.
2. If not using the entire contents, aliquot to minimize freeze-thaw cycles.
3. Store aliquots at –70 °C.

Storage/Stability

The product is shipped on dry ice and storage at –70 °C is recommended.

References

1. Miyata, M., et. al., Targeted Disruption of the Microsomal Epoxide Hydrolase Gene. J. Bio. Chem., **274**, 23963-23968 (1999).
2. Sinal, C.J., et. al., Targeted Disruption of Soluble Epoxide Hydrolase Reveals a Role in Blood Pressure regulation. J. Biol. Chem., **275**, 40504-40510 (2000).

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