

Product Information

Lipoxidase from *Glycine max* (soybean)

Type I-B, lyophilized powder, ≥50,000 units/mg solid

L7395

Product Description

CAS Number: 9029-60-1

Enzyme Commission (EC) Number: 1.13.11.12

Synonyms: Lipoxygenase,¹ Carotene oxidase,
Linoleate:oxygen 13-oxidoreductase

Molecular weight:

- 94 kDa (general)^{2,3}
- 94,038 Da¹, 94,511 Da⁴ (L-1)
- 97,035 Da (L-2)⁵
- 96.8 kDa (L-3/L-3b)⁴

Lipoxidases (lipoxygenases) are a group of non-heme, non-sulfur, iron-containing enzymes, present in both plants and animals, with key roles in metabolism of polyunsaturated fatty acids, such as lipids with a *cis,cis*-1,4-pentadiene moiety.²⁻⁸ In particular, lipoxidases from *Glycine max* (soybean) have been extensively studied. At least 4 lipoxidase isozymes have been characterized from soybeans (L-1, L-2, L-3, L-3b).² Soybeans contain distinct lipoxidases between leaves, mature seed, roots, and hypocotyls.⁹

Lipoxidase isozymes have been studied by isoelectric focusing and chromatofocusing.⁸⁻¹⁰ Various isoelectric point values have been published for lipoxidase and lipoxidase isozymes:

- General:⁸ 5.65
- L-1:⁹ 5.6
- L-2:⁹ 5.8
- Leaf:¹⁰ 5.67, 5.91, 6.67

A mass spectrometry study of soybean lipoxygenases has been reported.⁴

Lipoxidase has been characterized in terms of substrate specificity (*cis,cis*-1,4-pentadiene system),^{11,12} and in terms of the effects of pH, temperature, inhibitors, and substrate competition on activity.¹³ Lipoxidase has activity over a wide pH range. However, the enzymatic assay is performed at pH 9 to keep the substrate (linoleic acid) in solution.¹⁴

Several compounds have been tested for their ability to inhibit lipoxygenase.¹⁶ For example, the following compounds specifically inhibit all known lipoxidases:

- 5,8,11,14-Eicosatetraynoic Acid (Cat. No. E1768)
- Nordihydroguaiaretic acid (Cat. No. N5023)
- 3-tert-butyl-4-hydroxyanisole (Cat. No. B1253)
- Salicylhydroxamic acid (Cat. No. S607)

Butylated hydroxytoluene (Cat. No. B1378) inhibits some lipoxygenases. Other compounds inhibit some related enzymes without inhibiting lipoxygenase, such as acetylsalicylic acid (Cat. No. A5376), indomethacin (Cat. No. I7378), and metyrapone (Product No. 856525).

Several theses¹⁷ and dissertations¹⁸⁻²⁵ have cited use of L7395 in their research protocols.

Precautions and Disclaimer

This product is 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.

Storage/Stability

The product should be stored at -20 °C.

Preparation Instructions

This product is soluble in borate buffer, pH 9, at 0.1 mg/mL.

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