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Technical Data Sheet

For research use only
Not intended or approved for diagnostic or therapeutic use.

Product Name: Autotaxin Enzyme, active

Catalog Number: **E-4000**

Sizes: **2.5 µg, 25 µg, and 100 µg (4x 25 µg)**

Product Description: Secreted human β isoform (teratocarcinoma derived) autotaxin with C-terminal 6-His tag was expressed in Sf9 cells and purified using nickel-NTA chromatography. Enzyme is supplied lyophilized (Contains dextrose, Hepes, trehalose and Tween 20).

Storage and Stability: Store lyophilized enzyme at -20ºC or below. The lyophilized enzyme is stable for at least six months from date of arrival. Reconstitute autotoxin enzyme in cold ddH_2O for a 100 µg/mL stock solution, pipet up and down to mix, centrifuge briefly, make single use aliquots, flash freeze, and store at -80°C for up to 3 months. Avoid repeated freeze/thaw cycles and do not vortex ATX enzyme.

Enzyme Purity and Activity: See Certificate of Analysis for lot specific enzyme information.

Background: Autotaxin, also known as ATX, eENPP2, lysophospholipase D, phosphodiesterase 1α and plasma cell glycoprotein-1, is a secreted glycoprotein that is widely expressed with high levels in the serum. Via its lysophospholipase D (lysoPLD) activity autotaxin hydrolyzes lysophosphatidylcholine (LPC) to generate the phospholipid growth factor lysophosphatidic acid (LPA). The enzyme's same activity hydrolyzes sphingosylphosphorylcholine (SPC) to form sphinosine-1-phosphate (S1P). Autotaxin was first isolated as the autocrine motility factor secreted from melanoma cells[1]. At that time the enzyme's lysoPLD activity had not been identified, so it was classified by homology to the ecto-nucleotide pyrophosphatase/phosphodiesterase (NPP) family of enzymes whose members hydrolyze phosphodiester bonds in various nucleotides and nucleotide derivatives. It was initially unclear how nucleotide hydrolysis could lead to the stimulation of cell motility. This mystery was solved when autotaxin was discovered to be identical to serum lysoPLD[2,3]. Since then, the cancer-related activities of autotaxin, at least in cultured cells, have been attributed to the enzyme's lysoPLD activity[4,5]. In addition to cancer, autotaxin has been implicated in a number of diseases including obesity, arthritis, multiple sclerosis, Alzheimer's disease and neuropathic pain[6]. While autotaxin is a 100 kDa protein, post-translational modifications, such as glycosylations, contribute to it migrating at 125 kDa by SDS-PAGE.

Related Products and Assay Services:

- FS-3, Fluorogenic ATX Substrate (**L-2000**)
- ATX-Red AR-2, ATX Substrate as *in vivo* Imaging Probe (**L-2010**)
- Autotaxin inhibitors:
  - BrP-LPA (**L-7416**), Thio-ccPA (**L-7118**), Oleoyl 3-carbacyclic Phosphatidic Acid (**L-7218**)
  - GWJ-23 or GWJ-A-23 (**L-3223**), S32826 (**L-3282**)
  - HA130 (**B-0701**), PF-8380 (**B-0702**), Oral Formulation Vehicle (**B-0706**)
- Autotaxin Activity Assay (**K-4100**) and Assay Service (**T-4100**)
- Autotaxin Inhibitor Screening Kit (**K-4200** and **K-4200HTS**) and Assay Service (**T-4200**)
- Autotaxin Sandwich ELISA (**K-5600**) and Assay Service (**T-5600**)
- LPA (Lysophosphatidic Acid) ELISA Kit II (**K-2800S**) and Assay Service (**T-2800S**)

References:

(1) *Stracke, M.L. et al. J Biol Chem 267 (4), 2524-9 (1992).*
(2) Umezu-Goto, M. et al. J Cell Biol 158 (2), 227-33 (2002).
(3) Clair, T. et al. Cancer Res 63 (17), 5446-53 (2003).
(4) Moolenaar, W.H. J Cell Biol 158 (2), 197-9 (2002).
(5) Xie, Y. *et al. Cell Signal* 16 (9), 975-81 (2004).
(6) Parrill, A.L. *et al. Anticancer Agents Med Chem* 8 (8), 917-23 (2008).
(7) EL Shelton, *et al.* Published: July 25, 2013 https://doi.org/10.1371/journal.pone.0069712
(8) M Lanier, *et al.* J Med Chem. 2017 Jun 22; 60(12): 5209–5215.
(9) B Gupta, *et al. Canadian Journal of Physiology and Pharmacology*, 2016, 94(7): 788-796, https://doi.org/10.1139/cjpp-2015-0465