

Autotaxin Enzyme, active

Catalog Number: E-4000

Size: 2.5 µg, 25 µg, 100 µg (4 x 25 µg)

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 Handling: Store lyophilized enzyme at -20°C or below. The lyophilized enzyme is stable for at least six months from date of arrival. Reconstitute Autotaxin enzyme in cold ddH₂O 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 1 α 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 sphingosine-1-phosphate (S1P). Autotaxin was first isolated as the autocrine motility factor secreted from melanoma cells¹. 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 pain⁶. While Autotaxin is a 100 kDa protein, post-translational modifications, such as glycosylations, contribute to it migrating at 125 kDa by SDS-PAGE.

References:

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- (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
- (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