

PRODUCT INFORMATION



AP-TNAP (human, recombinant)

Item No. 44188

Overview and Properties

Synonyms: Alkaline Phosphatase, Alkaline Phosphatase Liver/Bone/Kidney Isozyme, Phosphoamidase, Phosphocreatine Phosphatase, Tissue Non-specific Alkaline Phosphatase, Tissue Non-specific Enzyme Isozyme, TNSALP

Source: Active recombinant human C-terminal His-tagged AP-TNAP expressed in HEK293 cells

Amino Acids: 1-502

Uniprot No.: P05186

Molecular Weight: 55 kDa

Storage: -80°C (as supplied)

Stability: ≥1 year

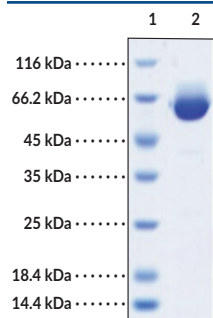
Purity: ≥95% estimated by SDS-PAGE

Supplied in: Lyophilized from 20 mM HEPES, 150 mM sodium chloride, 2 mM magnesium sulfate, 0.1 mM zinc chloride, pH 7.5

Endotoxin Testing: <1.0 EU/μg, determined by the LAL endotoxin assay

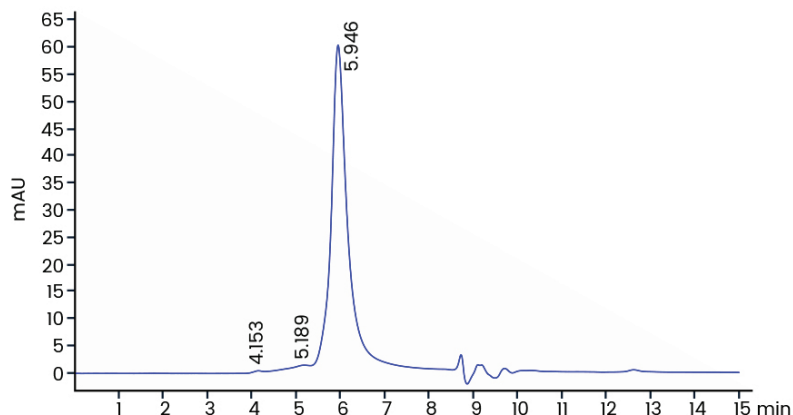
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: AP-TNAP

SDS-PAGE Analysis of AP-TNAP. This protein has a calculated molecular weight of 55 kDa. It has an apparent molecular weight of approximately 65 kDa by SDS-PAGE under reducing conditions due to glycosylation.



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

Alkaline phosphatase, tissue non-specific enzyme (AP-TNAP) is a monoester phosphohydrolase with roles in bone mineralization and early embryonic development of the CNS.¹⁻³ It is ubiquitously expressed but is enriched in liver, bone, kidney, and the CNS and is found in the cytoplasmic membrane. AP-TNAP hydrolyzes extracellular inorganic pyrophosphate, a mineralization inhibitor, to facilitate the deposition of hydroxyapatite in bones and teeth.³ It also converts pyridoxal-5'-phosphate, an active form of vitamin B₆, into pyridoxal, which functions as a cofactor for the synthesis of enzymes involved in the metabolism of several neurotransmitters. Mutations in *ALPL*, the gene encoding AP-TNAP, are associated with hypophosphatasia, an inborn error of metabolism characterized by severe skeletal hypomineralization, respiratory problems, and seizures, among other symptoms.^{4,5} AP-TNAP activity is increased in the hippocampus of patients with Alzheimer's disease compared with age-related controls.³ Cayman's AP-TNAP (human, recombinant) protein can be used for enzyme activity assay and Western blot (WB) applications. This protein consists of 496 amino acids, has a calculated molecular weight of 55 kDa, and a predicted N-terminus of Leu18 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, this protein has an apparent molecular mass of 65 kDa due to glycosylation.

References

1. Whyte, M.P. Physiological role of alkaline phosphatase explored in hypophosphatasia. *Ann. N. Y. Acad. Sci.* **1192**, 190-200 (2010).
2. Sato, M., Saitoh, I., Kiyokawa, Y., *et al.* Tissue-nonspecific alkaline phosphatase, a possible mediator of cell maturation: Towards a new paradigm. *Cells* **10(12)**, 3338 (2021).
3. Sebastián-Serrano, Á., de Diego-García, L., Martínez-Frailes, C., *et al.* Tissue-nonspecific alkaline phosphatase regulates purinergic transmission in the central nervous system during development and disease. *Comput. Struct. Biotechnol. J.* **13**, 95-100 (2014).
4. Del Angel, G., Reynders, J., Negron, C., *et al.* Large-scale in vitro functional testing and novel variant scoring via protein modeling provide insights into alkaline phosphatase activity in hypophosphatasia. *Hum. Mutat.* **41(7)**, 1250-1262 (2020).
5. Whyte, M.P. Hypophosphatasia - aetiology, nosology, pathogenesis, diagnosis and treatment. *Nat. Rev. Endocrinol.* **12(4)**, 233-246 (2016).

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