

PRODUCT INFORMATION



Thymosin α 1 (human, mouse, rat, bovine)

Item No. 28748

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|-------------------|------------------------------|---|
| CAS Registry No.: | 62304-98-7 | |
| Synonym: | Thymalfasin | |
| MF: | $C_{129}H_{215}N_{33}O_{55}$ | Ac-Ser-Asp-Ala-Ala-Val-Asp-Thr-Ser-Ser-Glu- |
| FW: | 3,108.3 | Ile-Thr-Thr-Lys-Asp-Leu-Lys-Glu-Lys-Lys- |
| Purity: | $\geq 98\%$ | Glu-Val-Val-Glu-Glu-Ala-Glu-Asn-OH |
| Supplied as: | A crystalline solid | |
| Storage: | -20°C | |
| Stability: | ≥ 4 years | |

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

Laboratory Procedures

Thymosin α 1 (human, mouse, rat, bovine) is supplied as a crystalline solid. A stock solution may be made by dissolving the thymosin α 1 (human, mouse, rat, bovine) in water. The solubility of thymosin α 1 (human, mouse, rat, bovine) in water is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Thymosin α 1 is an immunomodulator peptide formed from the cleavage of prothymosin α .¹ Thymosin α 1 inhibits the growth of 5TGM1 mouse and OPM-2, LP-1, and U266 human multiple myeloma cells *in vitro* but not *in vivo*.² It also increases CD3- and CD28-induced T cell proliferation in C57BL/KaLwRij splenocytes but not in allogeneic mixed lymphocyte reactions using C57BL/KaLwRij and BALB/c splenocyte co-cultures when used at a concentration of 20 μ M. Thymosin α 1 also inhibits the growth and migration of H1299, NL9980, and L9981 non-small cell lung cancer (NSCLC) cells that express high levels of programmed cell death ligand 1 (PD-L1) but not of A549 and SPC-A-1 NSCLC cells that express low PD-L1 levels.³ It also decreases the number of metastatic lesions in a L9981, but not an A549, NSCLC mouse xenograft model when administered at a dose of 20 mg/kg per day. Thymosin α 1 (200 μ g/kg) increases indoleamine 2,3-dioxygenase 1 (IDO1) expression and IL-10 levels and decreases IL-1 β and TNF- α production in the lung in a *p.Phe508del* mutant cystic fibrosis transmembrane conductance regulator (*CFTR*^{F508del/F508del}) mouse model of cystic fibrosis and chronic *A. fumigatus* infection.⁴

References

1. Manrow, R.E., Leone, A., Krug, M.S., *et al.* The human prothymosin α gene family contains several processed pseudogenes lacking deleterious lesions. *Genomics* **13**(2), 319-331 (1992).
2. Binsfeld, M., Hannon, M., Otjacques, E., *et al.* Impact of the immunomodulating peptide thymosin alpha 1 on multiple myeloma and immune recovery after hematopoietic stem cell transplantation. *Cancer Immunol. Immunother.* **64**(8), 989-998 (2015).
3. Bo, C., Wu, Q., Zhao, H., *et al.* Thymosin α 1 suppresses migration and invasion of PD-L1 high-expressing non-small-cell lung cancer cells via inhibition of STAT3-MMP2 signaling. *Oncotargets Ther.* **11**, 7255-7270 (2018).
4. Romani, L., Oikonomou, V., Moretti, S., *et al.* Thymosin α 1 represents a potential potent single-molecule-based therapy for cystic fibrosis. *Nat. Med.* **23**(5), 590-600 (2017).

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.

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