Technical Data Sheet

Thymosin Alpha-1

Product Information

Alternate Names:	Zadaxin™, Thymalfasin, Ta1
Size:	10.0mg
Format/Appearance:	Lyophilized, white/off-white powder
Sequence:	Ac-Ser-Asp-Ala-Ala-Val-Asp-Thr-Ser-Ser-Glu-Ile-Thr-Thr-Lys-Asp-Leu-Lys-Glu-Lys-Lys-Glu-Val-Val-Glu-Glu-Ala-Glu-Asn-OH
Purity:	>98%
Recommended Diluent:	Bacteriostatic Water

Description

Thymosin α-1 was originally isolated from thymic tissue and identified as being responsible for restoring and modulating immune function. Described as a biological response modifier and activator for various immune cells, Thymosin α-1 is expected to have clinical benefits in disorders where immune responses are impaired or ineffective.

Thymosin α-1 is an FDA approved medication under the trade name Zadaxin™ and is widely used and studied in multiple types of cancer and viral illnesses. These disorders include acute and chronic infections (including severe sepsis, infections after bone marrow transplant, lung infections including Chronic Obstructive Pulmonary Disorder (COPD), SARS-CoV2 (COVID19) hepatitis B and C, and HIV), cancers (HCC, lung cancer, and melanoma), and vaccine non-responsiveness, all of which are hallmarks of an impaired or inadequate immune response. Other areas of research also include chronic fatigue, Lyme disease and autoimmune disorders.

Indications and Benefit

- Immune modulation
- Treatment of viral infection
- Clinical trials suggest treatment efficacy in cystic fibrosis, septic shock, acute respiratory distress syndrome (ARDS), SARS-CoV2 (Covid-19), peritonitis, acute cytomegalovirus infection, Lyme disease, chronic fatigue and Hepatitis B and C
- Adjunct cancer therapy treatment

Preparation and Storage

Peptides should be stored in a dry, cool, dark place. For best preservation, store at 4°C or colder away from bright light. Dry peptides are stable at room temperature for many weeks but for long-term storage -20°C is to be preferred. Once reconstituted, refrigeration is essential.

Clinical Research and Related Publications

Bozza, S., Gaziano, R., Bonifazi, P., Zelante, T., Pitzurra, L., Montagnoli, C., Moretti, S., Castronari, R., Sinibaldi, P., Rasi, G., Garaci, E., Bistoni, F., & Romani, L. (2007). Thymosin 1 activates the

TLR9/MyD88/IRF7-dependent murine cytomegalovirus sensing for induction of anti-viral responses in vivo. International Immunology, 19(11), 1261–1270. https://doi.org/10.1093/intimm/dxm097

Knutsen, A. P., Freeman, J. J., Mueller, K. R., Roodman, S. T., & Bouhasin, J. D. (1999). Thymosin- α 1 stimulates maturation of CD34+ stem cells into CD3+4+ cells in an in vitro thymic epithelia organ coculture model. International Journal of Immunopharmacology, 21(1), 15–26. https://doi.org/10.1016/s0192-0561(98)00060-5

Liu, Y., Pan, Y., Hu, Z., Wu, M., Wang, C., Feng, Z., Mao, C., Tan, Y., Liu, Y., Chen, L., Li, M., Wang, G., Yuan, Z., Diao, B., Wu, Y., & Chen, Y. (2020). Thymosin Alpha 1 Reduces the Mortality of Severe Coronavirus Disease 2019 by Restoration of Lymphocytopenia and Reversion of Exhausted T Cells. Clinical Infectious Diseases, 71(16), 2150–2157. https://doi.org/10.1093/cid/ciaa630

Robert S. King, C. W. T. (2013). Thymosin Apha 1–A Peptide Immune Modulator with a Broad Range of Clinical Applications. Clinical & Experimental Pharmacology, 03(04), https://www.longdom.org/open-access/thymosin-apha-a-peptide-immune-modulator-with-a-broad-range-of-clinical-applications-2161-1459.1000133.pdf. https://doi.org/10.4172/2161-1459.1000133

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Romani, L., Tomino, C., Puccetti, P., & Garaci, E. (2020). Off-label therapy targeting pathogenic inflammation in COVID-19. Cell Death Discovery, 6(1), https://www.nature.com/articles/s41420-020-0283-2. https://doi.org/10.1038/s41420-020-0283-2

Serafino, A., Pica, F., Andreola, F., Gaziano, R., Moroni, N., Moroni, G., Zonfrillo, M., Pierimarchi, P., Sinibaldi-Vallebona, P., & Garaci, E. (2013). Thymosin α1 Activates Complement Receptor-Mediated Phagocytosis in Human Monocyte-Derived Macrophages. Journal of Innate Immunity, 6(1), 72–88. https://doi.org/10.1159/000351587

Serafino, A., Pierimarchi, P., Pica, F., Andreola, F., Gaziano, R., Moroni, N., Zonfrillo, M., Sinibaldi-Vallebona, P., & Garaci, E. (2012). Thymosin α1 as a stimulatory agent of innate cell-mediated immune response. Annals of the New York Academy of Sciences, 1270(1), 13–20. https://doi.org/10.1111/j.1749-6632.2012.06707.x

Wan, J. (2011). Thymosin-alpha1 promotes the apoptosis of regulatory T cells and survival rate in septic mice. Frontiers in Bioscience, 16(1), 3004. https://doi.org/10.2741/3894

Wu, M., Ji, J.-, Zhong, L., Shao, Z.-, Xie, Q.-, Liu, Z.-, Wang, C.-, Su, L., Feng, Y.-, Liu, Z.-, & Yao, Y.-. (2020). Thymosin α1 therapy in critically ill patients with COVID-19: A multicenter retrospective cohort study. International Immunopharmacology, 88, 106873. https://doi.org/10.1016/j.intimp.2020.106873