

◆ **Thymus gland extracts** support the vital function of the thymus gland, which plays a critical role of preparing numerous immune cells for their functions in protecting and maintaining health. One indicator of the importance of effective thymus gland function is that many immune cell names begin with “T,” which represents the key role of the thymus gland in their development and function. Examples are T-helper cells, T-regulator cells, and cytotoxic [cell-killing] T-lymphocytes. Better thymic function and improved T-cell function results in a cascading improvement in the overall immune response.¹ It is the job of the thymus to help us react against foreign cells and not against our own normal cells. Age and disease reduce thymic function.² Thymus gland extracts have been shown to: 1) modulate both innate and adaptive immune responses;³ 2) modulate NK cell activity;⁴ 3) and support the thymus in responding more effectively to a wide range of health challenges.^{5,6,7}

¹ **Enhanced Transfer Factor, 3rd edition**, p.12. Hennen WJ., Ph.D., Woodland Publishing, 2005.

<http://www.discovertransferfactor.com/ebooks.htm>

² **Thymus function, aging and autoimmunity**. Rose NR. Immunol Lett. 1994;40(3):225-30. <http://www.ncbi.nlm.nih.gov/pubmed/7959891>

³ **The immunomodulatory Role of Calf Thymus Extract on Humoral and Cell Mediated Immune Response in Chicken Vaccinated Against New Castle Disease Virus**. Naik BM, Babu H, Mamatha GS. Int J Poul Sci 2005 4(8):580-583.

Free full-text access: <http://www.ansijournals.com/archivedetails.php?jid=ijps&issueno=93>

⁴ **Modulation of human natural killer cell cytotoxic activity, Lymphokine production, and Interleukin 2 receptor expression by thymic hormones**. Serrate S, Schulof R, Leondaridis L, et al. J Immunol. 1987 Oct 1;139(7):2338-43. <http://www.ncbi.nlm.nih.gov/pubmed/3116079>

⁵ **Gross thymic extract, Thymax, induces apoptosis in human breast cancer cells in vitro through the mitochondrial pathway**.

Ghoneum M, Seto Y, Sato S, et al. Anticancer Res. 2008 May-Jun;28(3A):1603-9. <http://www.ncbi.nlm.nih.gov/pubmed/18630518>

⁶ **Thymosins:chemistry and biological properties in health and disease**. Goldstein AL, Badamchian M. Expert Opin Biol Ther. 2004

Apr;4(4):559-73. <http://www.ncbi.nlm.nih.gov/pubmed/15102605>

⁷ **THYMUS EXTRACTS: An International Literature Review of Clinical Studies**. Wilson, JL, 1999 Foundation for Immunology and Nutrition, Development, Education and Research. Review paper. Full text: http://www.ritecare.com/nutritional/natcell_thymus.html