MONOCLONAL ANTI-VITAMIN D RECEPTOR
Clone 9A7g.E10.E4
Purified Rat Immunoglobulin

Product Number V 9513

Product Description
Monoclonal Anti-Vitamin D Receptor (rat IgG2b isotype) is derived from the hybridoma produced by the fusion of mouse myeloma p3-NS-1/Ag4-1 cells with splenocytes from rat immunized with vitamin D receptor protein from chicken intestine. The antibody is purified by protein G chromatography.

Monoclonal Anti-Vitamin D Receptor recognizes human, pig, mouse, rat, hamster, and frog vitamin D Receptor (VDR) protein (approx. 53 kDa). The antibody has been used in immunoprecipitation, immunoblotting and gel shift assay.

Vitamin D is a hormone that, together with parathyroid hormone (PTH) and calcitonin, is a major regulator of Ca\(^{2+}\) concentration in plasma. It is synthesized in skin and transported by blood to distant sites in the body, where it becomes activated. Its active form then binds to specific receptors in target tissues, resulting in increased calcium concentration.\(^1\) In the last decade, studies have shown the significant role of vitamin D compounds as selective immunosuppressants able to either prevent or markedly suppress animal models of such autoimmune diseases as experimental autoimmune encephalomyelitis, rheumatoid arthritis, systemic lupus erythematosus, type I diabetes, and inflammatory bowel disease. In almost every case, the action of the vitamin D hormone requires that the animals be maintained on a normal or high calcium diet. The vitamin D hormone stimulates transforming growth factor TGF\(\beta\)-1 and interleukin 4 (IL-4) production, which in turn may suppress inflammatory T cell activity.\(^2\)

The effects of vitamin D and calcium are mediated by the vitamin D receptor (VDR). Vitamin D receptor is nuclear protein found in T lymphocytes and macrophages, however, its highest concentration is in the immature immune cells of the thymus and the mature CD8 T lymphocytes. In mammals, the vitamin D receptor is a protein of approximately 53 kDa. In birds, VDR appears as a doublet of 58 kDa and 60 kDa.

Human breast carcinomas, leukemias and prostatic carcinoma cells express VDR, which can modify their growth and differentiation. Current research also shows that genetic variation may contribute to higher susceptibility to four chronic postmenopausal syndromes such as osteoporosis, osteoarthritis, Alzheimer's disease and coronary artery disease. For these four syndromes, candidate genes that appear as major loci in genetic susceptibility encode for proteins specific for a given system, such as the vitamin D receptor (VDR) gene for the skeleton and, therefore, osteoporosis or angiotensin converting enzyme (ACE) for the cardiovascular system and coronary artery disease.\(^3,4\)

Data indicate that there are two mechanisms of the molecular mode-of-action of 1,25-dihydroxyvitamin D(3). One involves the activation of nuclear vitamin D receptor (nVDR) that causes transcriptional regulation of many vitamin D-responsive genes. The other involves activation of non-genomic signal transduction pathways in target cells. This second mechanism is likely to engage a membrane vitamin D receptor (mVDR). In chick epithelium, a 64.5 kDa protein has been discovered that may be a mVDR. This protein specifically binds 1,25-dihydroxyvitamin D(3) and is responsible for some rapid cellular actions of 1,25-dihydroxyvitamin D(3).\(^5\)

Reagent
Monoclonal Anti-Vitamin D receptor is supplied as a solution in phosphate buffered saline, pH 7.4, with 0.08% sodium azide as a preservative.

Precautions and Disclaimer
Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.
**Storage/Stability**
Store at –20 °C. Upon initial thawing freeze the solution in working aliquots for extended storage. Avoid repeated freezing and thawing to prevent denaturing the antibody. The antibody is stable for at least 12 months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

**Product Profile**
A recommended working concentration of 1 µg/ml is determined by immunoblotting using human breast tumor cells. The data demonstrate that only tissues containing Vitamin D receptor 53 kDa protein stained positively with Anti-VDR antibody, which confirms the specificity of this antibody for the VDR protein. For immunoprecipitation or gel shift, a working concentration of 2 µg/mg of protein lysate is recommended.

Note: In order to obtain best results using different techniques and preparations we recommend determining optimal working concentration by titration.

**References**

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