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Cat.No. 13290010

Product: Nerve Growth Factor 7S
(NGF 7S, murine, natural)

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Cat. No.: 13290-010**Lot No.:****Size:** 100 µg**Storage Conditions:** -20°C**FORM:** Lyophilized from potassium phosphate buffer with 1 µmol/L zinc chloride.**STORAGE:** Lyophilized: -20°C

Reconstitute: -20°C; Stable at least six months.

PRODUCT DESCRIPTION: This preparation of Nerve Growth Factor 7S (NGF 7S) was purified from the submaxillary glands of mice. NGF 7S contains three different types of subunits, α , β and γ . Growth of chick embryo dorsal root ganglia is obtained with 5-100 ng/ml of NGF 7S. This natural form of NGF 7S has a molecular weight range of 130-140 kDa. Murine natural NGF 7S is active on human, mouse, rat and chicken cells.

BACKGROUND: NGF was the first growth factor to be identified. Natural NGF exists as a complex referred to as NGF 7S, that contains two molecules of the arginine esteropeptidase γ -subunit, two molecules of the acidic protein α -subunit, one or more zinc ions bound to the γ -subunit, and the biologically active 2.5S subunit, also referred to as the β -subunit. The 2.5S subunit of the 7S complex is entirely responsible for the biological activities of NGF.¹ The additional subunits that comprise NGF 7S appear to protect the 2.5S subunit from proteolytic cleavage.^{1,2}

This product is distributed for laboratory research use only. **CAUTION:** Not for diagnostic use. The safety and efficacy of this product in diagnostic or other clinical uses has not been established.

NGF regulates the development and maintenance of sympathetic and some sensory neurons.³ NGF possesses chemotactic properties that influence the direction of neurite growth.⁴ A number of general molecular mechanisms for the cellular response to NGF have been proposed, including involvement of phospholipid or protein methylation,^{5,6} phosphatidylinositol turnover,⁷ stimulation of the Na⁺/K⁺ pump,⁸ and elevation of intracellular cAMP and free CA²⁺ levels.⁹

APPLICATIONS: This preparation of NGF 7S can be used for studies of nerve cell growth and differentiation, and for biochemical studies of the basis of the various immediate and delayed biological activities of NGF. It can also be used as a medium supplement to support the growth or survival of neuronal cells in culture.

The biological effects of NGF are usually observed at 5 to 100 ng/ml.

Examples include:

- Stimulation of delayed and rapid responses.¹⁰
- Induction of protein and RNA synthesis¹¹
- Induction of neurite outgrowth⁴
- Maintenance of neural cell viability in culture¹²
- Stimulation of protein tyrosine phosphorylation¹³

LIMITATIONS: Required dosage depends on the experimental system. This NGF 7S preparation is one-tenth as active, on a weight basis, as the NGF 2.5S preparation [Cat. No. 13257-019] in outgrowth of chicken dorsal root ganglia.

DIRECTIONS FOR USE: Reconstitute murine natural NGF 7S to a stock concentration of 100 µg/ml with 1 ml of sterile culture medium containing 1-2% (w/v) BSA. Aliquot into single-use portions in polypropylene vials and store at -20°C to avoid repeated freeze/thaw

cycles. **Do not store in dilute solution.** Dilute immediately before use. To avoid loss of protein or activity, prepare dilute solutions in appropriate buffer or medium containing at least 0.1% (w/v) BSA or 1-10% (v/v) serum. Carrier protein (BSA or serum) is needed to stabilize the NGF protein.

QUALITY CONTROL:

PURITY AND IDENTITY

- SDS-PAGE
- Result: ≥95% pure**

FUNCTIONAL QUALIFICATION

- Neurite outgrowth in chick embryo dorsal root ganglia.¹⁴
- Result: Optimal growth effect at 5-100 ng/ml of 7S NGF**

Please refer to the GIBCO BRL catalog for a comprehensive listing of related Cell Biology products