

## Product Information

### Nerve Growth Factor-2.5S from murine submaxillary glands

NGF-2.5S, lyophilized powder, suitable for cell culture

Catalog Number **N6009**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

CAS RN 93928-24-6

Synonym: NGF-2.5S

#### Product Description

Nerve Growth Factor (NGF) was first discovered in 1953 by Levi-Montalcini, Hamburger, and Cohen<sup>1-3</sup> in two mouse sarcomas. It was described as a diffusible agent, which strongly promotes fiber outgrowth of sensory neurons in chick embryos. Cohen purified NGF from snake venom<sup>4</sup> and from mouse salivary glands.<sup>5</sup>

NGF is a neurotrophic agent thought to be provided by peripheral tissues for the guidance and sustenance of outgrowing embryonic sympathetic and sensory neurons.<sup>6</sup> NGF induces the formation of neurite-like filaments from chick embryo dorsal root ganglia<sup>2</sup> and from rat PC12 pheochromocytoma cells.<sup>7</sup> *In vivo* NGF may be involved in fetal development<sup>8,9</sup> and nerve regeneration.<sup>10</sup> NGF may also play a physiological role within the central nervous system.<sup>8,11,12</sup>

Cellular receptors for NGF have been found in a variety of cell lines<sup>13</sup> and tissues, including cholinergic neurons of the brain<sup>14,15</sup> and Schwann cells of damaged nerve axons.<sup>10</sup> Two kinetic types of NGF receptors have been identified from peripheral neurons,<sup>16</sup> neuroblastoma cells,<sup>17</sup> and PC12 cells.<sup>18</sup> They are designated as type I (high affinity) and type II (low affinity). The signal transduction mechanism of the receptor has not been clearly identified.

Nerve Growth Factor isolated from mouse submaxillary glands under non-dissociative conditions (NGF-7S, Catalog Number N0513) has a sedimentation coefficient of 7.1 S.<sup>19,20</sup> It is generally believed that NGF-7S is a 130 kDa protein composed of five non-covalently linked subunits ( $2\alpha$ ,  $1\beta$ ,  $2\gamma$ ), although there is recent evidence for a different endogenous form of high molecular mass NGF.<sup>21</sup> After dissociation of purified NGF-7S by acidic or basic pH, only the  $\beta$  subunit of NGF (NGF- $\beta$ ) has neurotrophic activity.<sup>6</sup> NGF- $\beta$  is a 26.5 kDa dimer of identical 118-residue chains held together tightly by noncovalent bonds.

NGF-2.5S is a form of NGF- $\beta$  initially isolated under dissociative conditions and is often slightly different from NGF- $\beta$  due to proteolysis incurred during its purification.<sup>6</sup> Apparently the 7S complex protects the amino- and carboxy-terminals of NGF- $\beta$  from hydrolytic enzymes present in the submaxillary gland extract.<sup>22</sup> Both NGF-2.5S and NGF- $\beta$  have comparable bioactive potencies.<sup>23</sup>

This product is lyophilized from 0.2  $\mu\text{m}$  filtered 5 mM sodium acetate, pH 5.0, with no carrier protein.

EC<sub>50</sub>: 0.1–30 ng/ml

The biological activity of Nerve Growth Factor-2.5S is measured in a cell proliferation assay using PC-12 cells.<sup>24</sup> The EC<sub>50</sub> is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

Purity: >95% (SDS-PAGE)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

To prepare a stock solution, reconstitute the contents of the vial in a solution that contains 0.1–1.0% BSA or 1–10% serum in buffered saline or tissue culture medium. This may be diluted immediately before use to the final working concentration of NGF-2.5S, generally 0.1–10 ng/ml. Additional filtration of the stock solution is not recommended and may result in product loss due to adsorption onto the filter membrane.

#### Storage/Stability

Store the product at  $-20\text{ }^{\circ}\text{C}$ . After reconstitution, the product may be stored for two weeks at  $2-8\text{ }^{\circ}\text{C}$  or may be stored as aliquots at  $-20\text{ }^{\circ}\text{C}$ . Prolonged storage of product, or repeated freezing and thawing is not recommended.

## References

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