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[Lab. of Molecular Biology]

Amino Acid Sequence of Nerve Growth Factors Derived from Cobra Venoms.

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Nerve growth factor (NGF) is a polypeptide hormone, that is necessary for the survival both *in vivo* and *in vitro* of embryonic sympathetic and sensory neurons. Though snake venom is one of the most abundant sources of NGF, studies on snake venom NGFs have not been made so frequently as those on mouse NGF. It is important to determine the sequences of various snake venom NGFs in order to explain the structure/function relationships of NGF. Amino acid sequences of NGFs, purified from the venoms of Indian and Thailand cobra were determined. The sequence of Indian cobra NGF differed from that reported previously by Hogue-Angeletti *et al.* The sequence of Thailand cobra NGF was identical to that of Formosan cobra NGF.

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[Lab. of Molecular Biology]

Development of Sensitive Enzyme Immunoassay for Human Nerve Growth Factor (hNGF).

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We prepared anti-recombinant human nerve growth factor (hNGF) antibody IgG and characterized its property immunologically. This antibody IgG reacted with some animal NGFs, especially with bovine NGF, on immunodiffusion analysis. Using this antibody IgG, we developed a sensitive two-site enzyme immunoassay (EIA) system for hNGF, based on the biotin-streptoavidin system. NGF at a concentration as low as 0.02 pg/well (corresponding to 8×10^{-19} mol) could be measured with high reproducibility. The sensitivity of this EIA was equal to that of our EIA for mouse NGF. With this EIA the detection limit of other mammalian NGFs was reduced in parallel with the degree of decrease in amino acid sequence homology between them and hNGF.

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Memory Impairment in Rats Induced by an Active Fragment of Nerve Growth Factor Antibody.TOSHITAKA NABESHIMA, SHIN-ICHI OGAWA, HIDENAO NISHIMURA, KIYOFUMI YAMADA,
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Nerve growth factor (NGF) is a protein of known importance for the development and maintenance of peripheral sympathetic neurons. Recent anatomical, behavioral, and biochemical studies have been interpreted as suggesting a possible role for NGF in the central nervous system. However, no direct evidence exists implicating altered levels of NGF as causative in either normal aging or in accelerating neurodegenerative processes such as Alzheimer's diseases. We report here that continuous intracerebral infusion of a specific Fab' fragment of antiserum to NGF over a period of four weeks impairs learning and memory retention of the water maze and habituation tasks in rats.