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Comparison of the Biochemical and Immunological Properties of Nerve Growth Factors from Various Animals.

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Nerve growth factors (NGFs) were purified from mouse submaxillary gland, guinea pig prostate gland, bovine seminal plasma, and venom of *Naja naja atra*, and their biochemical and immunological properties were compared. The NGF's from the four sources stimulated the maximal response of nerve fiber outgrowth from chick dorsal root ganglia at 10 ng/ml. Two-site enzyme immunoassay (EIA) systems for these NGFs showed that mouse NGF, guinea pig NGF, and bovine NGF were similar in immunological properties and that the crossreactivity was less than 1% between snake NGF and mammalian NGF's. However, pretreatment with anti-snake NGF antibody inhibited the biological activity of mammalian NGF's even when their immunological activity was not completely inhibited.

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Molecular Nature of β -Nerve Growth Factor (NGF)-Like Immunoreactive Substance(s) in Mouse Plasma.

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A sensitive two-site enzyme immunoassay system for mouse β -nerve growth factor (β -NGF) was developed, based on sandwiching of the antigen between anti- β -NGF IgG antibody coated on a polystyrene bead and anti- β -NGF Fab' antibody-linked peroxidase. Its discriminatory sensitivity was as low as 1 pg/ml. Using this enzyme immunoassay system, we examined the levels of β -NGF in various tissues, serum, and plasma of mice. Among these, the level of β -NGF in submaxillary gland was found to be extremely high, as has been reported previously. To examine the molecular nature of NGF in plasma, serum or plasma was applied to a column of Sephadex G-100. β -NGF-like immunoreactive substances appeared over a range from the void volume to the position of β -NGF.

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Demonstration of a Considerable Amount of Mouse Epidermal Growth Factor in Aqueous Humor.

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Using our EIA system for mEGF, we identified a high level of EGF-like immunoreactive material(s) in mouse aqueous humor. This material(s) and mEGF from mouse submaxillary gland were virtually equivalent with respect to molecular weight and antigenicity. Also, on chromatofocusing analysis, the mEGF-like material(s) gave a major peak at pH 4.7 with a minor one at pH 4.2. These results demonstrate that the mEGF-like immunoreactive material(s) found in aqueous humor is a molecule identical to submaxillary gland EGF. Also, no clear difference was observed in the mEGF levels in aqueous humor between male and female. Further, sialoadenectomy did not change dramatically the EGF level in aqueous humor.