

[Neurosci. Lett., 177, 116-118 (1994)]

[Lab. of Molecular Biology]

Developmental changes of nerve growth factor levels in the gracile axonal dystrophy mouse.

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Nerve growth factor (NGF) levels were measured in various tissues of the gracile axonal dystrophy (GAD) mouse. When the disease had fully progressed, the NGF levels in the skeletal muscle, dorsal root ganglion and the spinal cord were decreased. These findings suggest that a reduction of the NGF levels is involved in the pathophysiological processes in the GAD mouse.

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[Lab. of Molecular Biology]

Increased nerve growth factor level at the distal stump of transected sciatic nerve in relation to aging and its application for neural grafting.

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The nerve growth factor (NGF) level in the distal stump of mouse sciatic nerve transected 24h before increased significantly. This level was higher in aged (24-month-old) mice than in aging (12-month-old) or in young (1-month-old) mice. Adrenal medulla mixed with the pretransected (24 h before) distal stump of the sciatic nerve of aged mice was cografted into the ipsilateral striatum of aged mice with a unilateral 6-hydroxydopamine lesion of dopaminergic system. Cografted mice showed partial functional compensation while mice with adrenal grafts alone did not. It is shown that NGF level in the pretransected peripheral nerve is increased even in aged animals and cografting with adrenal medulla can be utilized in aged animals with nigrostriatal insufficiency.

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The therapeutic effects of 4-methylcatechol, a stimulator of endogenous nerve growth factor synthesis, on experimental diabetic neuropathy in rats.YASUO HANAOKA, TAKEKAZU OHI, SHOEI FURUKAWA*, YOSHIKO FURUKAWA,
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We estimated therapeutic effects of 4-methylcatechol (4-MC) on streptozotocin (STZ)-induced diabetic neuropathy in rats. Diabetic rats showed a reduction in motor nerve conduction velocity (MNCV), mean myelinated axon diameter, and NGF content in the sciatic nerve. The 4-MC treatment started 4 weeks after the STZ injection resulted in greater NGF content, faster MNCV, and larger mean myelinated nerve fiber diameter and axon diameter than in untreated diabetic rats. These findings suggest that a decreased NGF level in the diabetic sciatic nerves may be involved in the pathogenesis of diabetic neuropathy and that 4-MC treatment may be useful for diabetic neuropathy.