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Binding of Cardiotoxin Analogue III from Formosan Cobra Venom to FL Cells.

MASAYUKI TAKECHI, YASUO TANAKA and KYOZO HAYASHI*

The binding equilibrium at 37°C or 0°C of ^{125}I-cardiotoxin analogue III (CT III) to fetal lung (FL) cells (cultured human amnion cells) was achieved within 1 h, and the binding at 37°C was irreversible. The Scatchard analysis at 37°C on the binding of ^{125}I-CT III indicated that FL cells had two types of binding sites with different association constants. The association constant and the number of high-affinity sites was 1.1×10^{10} mol^{-1} or 2.8×10^{6} per FL cell, respectively. At 37 or 0°C, the cytotoxicity of CT III paralleled the amount of bound CT III to FL cells, and at 37°C was inhibited by the presence of acidic phospholipids.

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Aliphatic Side Chain of Catecholamine Potentiates the Stimulatory Effect of the Catechol Part on the Synthesis of Nerve Growth Factor.

YOSHIKO FURUKAWA, SHOEI FURUKAWA, FUMIAKI IKEDA, EIJIRO SATOYOSHI and KYOZO HAYASHI*

Catecholamines are potent in stimulating nerve growth factor (NGF) synthesis in mouse L-M cells. The relationship between the structure of catecholamines and their stimulatory effect on NGF synthesis has deen studied using various 3,4-dihydroxyphenyl derivatives or their analogs. All 3,4-dihydroxypheyl derivatives with two saturated carbons on the side chain were potent stimulators, whereas those with only one carbon on the side chain were weak stimulators. Drugs lacking the catechol ring were not effective. These results suggest that the catechol part of catecholamines is essential for the stimulatory effect and that the aliphatic side chain potentiates this effect, and that the terminal amino residue on the side chain is not critical.

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Serum Carbonic Anhydrase III in Patients with Neuromuscular Disorders.

MITSUHIRO OHTA, MAKIE ITAGAKI, KIYOE OHTA, FUMIYO MORI, HIROSHI NISHITANI and KYOZO HAYASHI*

A carbonic anhydrase (CA) isoenzyme III is found almost specifically in skeletal muscle. We have developed a sensitive radioimmunoassay for human muscle CA III. The purpose of this study was to evaluate the applicability of CA III measurements to monitoring the progress of neuromuscular diseases. Measurement of serum CA III seems to be of potential value and on a par with creatine phosphokinase in the diagnosis of progressive muscular dystrophy and other neuromusular disorders. In patients with spinal muscular atrophy or amyotrophic lateral sclerosis, CA III was a more sensitive indicator than creatine phosphokinase.