

[Igakunoayumi, 134, 113 (1985)]

Determination of Serum Carbonic Anhydrase III in Muscular Disorders and Its Clinical Significance.

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Skeletal muscle specific carbonic anhydrase III (CA III) is found to be existed in human muscle. This enzyme is considered to be a marker for various muscular disorders. Thus, we examined and succeeded to establish a highly sensitive radioimmunoassay system for CA III. Using this assay system, levels of CA III in the sera of patients with various muscular disorders were examined. Our results on the levels of CA III in the sera of patients coincided with those reported by Carter *et al.* CA III was detected in all sera of the patients with progressive muscular dystrophy and considerably high levels of the enzyme was observed in the sera of patients with duchenne muscular dystrophy.

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Frontal Affinity Chromatography of Ovalbumin Glycoasparagines on a Concanavalin A-Sephrose Column.

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The interaction of Sepharose 4B immobilized concanavalin A (Con A) with 10 glycoasparagines derived from ovalbumin were investigated quantitatively by frontal affinity chromatography. The dissociation constant (Kd) for each saccharide with Con A can be determined. The Kd values obtained showed that the binding of Con A varies considerably with very slight structural differences of the glycosyl chain. The results suggest that Con A recognizes a specific glycosyl chain structure, $\text{Man}\alpha 1 \rightarrow 6(\text{Man}\alpha 1 \rightarrow 3)\text{Man}$, in which at least one hydroxyl group at the C-3 position of C-6-linked mannose should be free. The glycoasparagines containing this structure bound strongly to Con A-Sephrose with dissociation constants below 3.4×10^{-7} M.

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Vibrational Spectra of β -Lactams. I. 2-Azetidinone and Its Isotopic Compounds.

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The infrared and Raman spectra of 2-azetidinone and its 1-*d*, 3, 3-*d*₂, and 1, 3, 3-*d*₃ and their ¹⁵N compounds have been recorded, and the observed bands have been assigned on the basis of the isotope effects and the normal coordinate analysis. The refined force constants have reproduced the observed frequencies satisfactorily. The C-N stretching mode is strongly coupled with the N-H bending vibration to give a band near 1380 cm⁻¹. However, this coupling does not give rise to any bands corresponding to the amide II and III bands. The concentration dependence of the infrared spectrum suggests the presence of an equilibrium of monomer \rightleftharpoons cyclic dimer in carbon tetrachloride solution. The solvent effects on the N-H and C=O stretching bands have also been examined.