

アルコール脱水素酵素: NADH系モデルの合成と反応性に関する研究

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1991 Fiscal Year Final Research Report Summary

Preparation and Reactivity of an Alcohol Dehydrogenase-NADH Model

Research Project

Project/Area Number

02670950

Research Category

Grant-in-Aid for General Scientific Research (C)

Allocation Type

Single-year Grants

Research Field

Chemical pharmacy

Research Institution

Kanazawa University

Principal Investigator

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Keywords

Alcohol dehydrogenase-NADH model / 1, 4-Dihydrionicotinamide / Adenine / Magnesium ion / ¹H-NMR / UV spectrum / Methyl benzoylfoumate / Reduction

Research Abstract

As a model for alcohol dehydrogenase-NADH couple, a series of macrocyclic 1, 4-dihydrionicotinamides 1a-c linked adenine was prepared via N-[omega-(9-(6-hydroxyhexyl) purin-6-ylamino) alkyl]nicotinamide (a, alkyl = butyl ; b, pentyl ; c, hexyl) by iodination of the hydroxyl group followed by cyclization to the pyridinium salt and reduction. The coordination behavior of 1b, c with magnesium ion in acetonitrile was investigated by ultraviolet and ¹H-NMR spectroscopies, and compared with those of 1-methyl-3-(N-methylcarbamoyl)-1, 4-dihydropyridine (2) and 1-[6-(6-methylamino-9H-purin9-yl) lhexyl-3-(N-methylcarbamoyl)-1, 4-dihydropyridine (3). The adenine moiety in 1b, c accelerates complexation of magnesium ion at the dihydrionicotinamide moiety, presumably by acting as a pi electron donor. The reactivity of 1a-c, 2, and 3 toward methyl benzoylformate in the presence of magnesium perchlorate in acetonitrile was kinetically investigated and found to be of the order 1b>1a>3>greater than or equal>1c>2 under the conditions teste

